

**STP 7-11BCHM1-SM**

**SOLDIER'S MANUAL**  
**MOS 11B, 11C, 11H, 11M**  
**INFANTRY**  
**SKILL LEVEL 1**


**HEADQUARTERS**  
**DEPARTMENT OF THE ARMY**

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**STP 7-11BCHM1-SM**  
**1 MARCH 2000**

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Headquarters  
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**SOLDIER'S MANUAL**

**MOS 11B, 11C, 11H, AND 11M**

**INFANTRY**

**SKILL LEVEL 1**

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\*This publication supersedes Chapter 1, pages 3-1 through 3-453, and all acronyms, abbreviations, and references that apply to 11BCHM skill level 1 tasks, of STP 7-11BCHM14-SM-TG, 30 September 1988.

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## PREFACE

This publication is for Skill Level 1 soldiers holding the military occupational specialties 11B, 11C, 11H, and 11M. It contains standardized training objectives, in the form of task summaries, to train on critical tasks that support unit missions during wartime. Soldiers holding MOS 11BCHM1 should have access to this publication. It should be made available in the work area, unit learning center, and unit libraries.

This manual applies to both Active and Reserve Component soldiers.

The proponent of this publication is the United States Army Infantry School. Send comments and recommendations on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to--

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Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.



## CHAPTER 1

# INTRODUCTION

*This soldier's manual (SM) identifies the individual military occupational specialty training requirements for soldiers in MOS 11BCHM. Commanders, trainers, and soldiers should use it to plan, conduct, and evaluate individual training in units. This manual is the primary MOS reference to support the self-development and training of every soldier. It is used with the following manuals to establish effective training plans and programs that integrate soldier, leader, and collective tasks:*

- *STP 7-11BCHM24-SM-TG.*
- *The soldier's manuals of common tasks (STP 21-1-SMCT and STP 21-24-SMCT).*
- *Army Training and Evaluation Programs (ARTEPs).*
- *FM 25-101.*

### 1-1. TASK SUMMARIES

Task summaries outline the wartime performance requirements of each critical task in the SM. They provide the soldier and the trainer with the information needed to prepare, conduct, and evaluate critical task training. As a minimum, task summaries include information the soldier must know and the skills that he must perform to standards for each task. The format for the task summaries included in this SM is as follows:

- a. **Task Number.** A 10-digit number identifies each task or skill. This task number, along with the task title, must be included in any correspondence pertaining to the task.
- b. **Task Title.** The task title identifies the action to be performed.
- c. **Conditions.** The task conditions identify all the equipment, tools, references, job aids, and supporting personnel that the soldier needs to use to perform the task in wartime. This section identifies any environmental conditions that can alter task performance, such as visibility, temperature, or wind. This section also identifies any specific cues or events that trigger task performance such as a chemical attack or identification of a threat vehicle.
- d. **Standards.** The task standards describe how well and to what level the task must be performed under wartime conditions. Standards are typically described in terms of accuracy, completeness, and speed.
- e. **Training and Evaluation.** The training evaluation section identifies specific actions (known as performance measures) that the soldier must do to successfully complete the task. These actions are in the evaluation guide section of the task summary and are listed in a pass/fail format for easy evaluation. For some tasks, the training and evaluation section may also include detailed training information in a training information outline and an evaluation preparation section. The evaluation preparation section indicates necessary modifications to task performance in order to train and evaluate a task that cannot be trained to the wartime conditions. It may also include special training and evaluation preparation instructions to accommodate these modifications, and any instructions that should be given to the soldier before evaluation.

f. **References.** This section identifies references that provide more detailed and thorough explanations of task performance requirements than those given in the task summary description.

g. **Warnings.** Warnings alert users to the possibility of immediate personal injury or damage to equipment.

h. **Notes.** Notes provide a supportive explanation or hint that relates to the performance standards.

## 1-2. SOLDIER'S RESPONSIBILITIES

Each soldier is responsible for performing individual tasks that the first-line supervisor identifies based on the unit's mission-essential task list (METL). The soldier must perform each task to the standards listed in the SM. If a soldier has a question about how to do a task or which tasks he must perform, he must ask the first-line supervisor for clarification. The first-line supervisor either knows how to perform each task or can direct the soldier to the appropriate training materials.

## 1-3. TRAINING SUPPORT

This manual includes the following appendixes and information:

a. **Appendix A, Proponent School or Agency Codes.** This appendix lists the proponent school or agency codes, which are the first three digits of the task number.

b. **Appendix B, Example Completed DA Form 5164-R (Hands-On Evaluation).** This appendix shows an example completed DA Form 5164-R. This form is optional--trainers can reproduce it locally on 8 1/2 by 11-inch paper. They can find the original, reproducible form in the back of *STP 21-24-SMCT*, which also contains instructions for using the form.

c. **Glossary.** The glossary, which follows the last appendix, is a single comprehensive list of acronyms, abbreviations, definitions, and letter symbols.

d. **References.** This section contains two lists of references that support training of all tasks in this SM. "Needed" references are listed in the conditions statement and are required for the soldier to do the task. "Recommended" references are materials that help a trainer prepare for the task but are not required to perform the task.

**CHAPTER 2**

**SKILL LEVEL 1 TASKS**

**WEAPONS, GENERAL**

**PREPARE AN ANTIARMOR RANGE CARD**  
**071-317-0000**

**CONDITIONS**

Given a DA Form 5517-R and all pertinent data (as received from the squad leader's briefing).

**STANDARDS**

Complete the standard range card form within 15 minutes. Include a scaled-down sketch of the terrain, marginal data, all data from the squad leader's briefing, and the data section of the range card, which should include the unit designation (no higher than company level); a magnetic north arrow (properly oriented); a sector of fire, drawn in solid lines, which should clearly show the locations of left and right limits, maximum engagement line, dead spaces within the sector of fire; a target reference point(s); the weapon's location, indicated by its distance and azimuth from and location relative to a known point (weapon reference point); and a data section, which should include type of position, date (day and month), weapon type, circle intervals (in meters), azimuth distance, and descriptive remarks about anything of particular interest or not covered previously.

**TRAINING AND EVALUATION**  
**Training Information Outline**

1. Definitions.
  - a. Range card. A range card is a sketch of the terrain that a particular weapon has been assigned to cover by fire. The range card contains data that—
    - (1) Helps leaders plan and control fires.
    - (2) Orients replacement personnel or units.
    - (3) Helps the gunner quickly and correctly detect and engage targets in his assigned sector of fire.
  - b. Sector of fire. A sector of fire is the portion of battlefield each gunner must cover. Leaders show each gunner where to position his weapon and what part of the terrain he will be responsible for. Leaders use terrain features (target reference points) or azimuths to indicate the boundaries (left and right limits) of each sector of fire. They may assign each gunner a primary and a secondary sector of fire.
  - c. Target reference points. The company commander chooses natural or man-made terrain features as TRPs. These help leaders and gunners locate targets and adjust fires.

Each TRP is identified by a unique combination of letters, numbers, or both. Leaders show each gunner the TRP(s) in or near his sector of fire, and the gunner marks each TRP on his range card. Normally, each sector of fire has between one and three TRPs.

d. Dead space. Dead space is any natural or man-made feature that the gunner cannot fire into or behind. For example, dead space could include a hill, draw, or building. Each gunner marks the dead spaces in his sector with diagonal lines (////) or with the words, “DEAD SPACE.” Other weapons will cover dead spaces.

e. Maximum engagement line. The area a gunner can cover is also limited by the weapon’s maximum engagement range. In some places, dead spaces may prevent the gunner from firing all the way to the maximum engagement range. Thus, he should draw the maximum engagement line in front of the dead spaces in his sector of fire. He can write out “MAXIMUM ENGAGEMENT LINE,” or he can shorten it to, “MAX ENG LINE.”

f. Alternate and supplementary positions. Leaders may assign each gunner an alternate and supplementary position. Once leaders have given gunners the necessary information, each gunner may begin preparing a range card(s). He should prepare a separate range card for each assigned position (sector of fire).

**EXAMPLE:** Figure 1 shows the terrain used in this example. The section leader says to the squad leader, “I want you to cover a sector of fire that starts here at your firing position and goes to a point about \_\_\_\_ meters past that windmill on the left, moves to the right across the high ground at \_\_\_\_ meters behind the houses, through the woodline, and behind the hill, church, and orchard, until it reaches a point about \_\_\_\_ meters beyond the right leading edge of that orchard, then returns here to your firing position.

“The enemy will approach from the north, so they will use those two roads to enter our sector. On the road behind the church and the orchard, engage enemy armored vehicles as soon as they come into range. On the other road, engage enemy targets as soon as they appear from behind the left side of that large hill. Copy down the two target reference points in your sector: The windmill is TRP C-1, and the church is TRP C-2.”

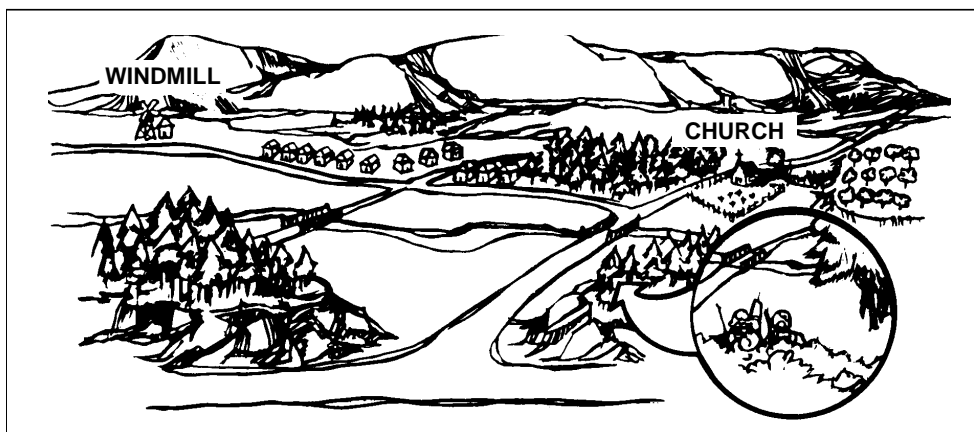


Figure 1. Area of coverage.

2. Preparation of the range card. The leader gives the gunner the necessary information, and the gunner prepares the range card. If assigned a supplementary firing position, the gunner must prepare a range card for that also. To prepare the range card(s), he first must determine the following and write or draw it on the range card:

a. Sector sketch. Draw a sector sketch that covers the entire sector. Draw the sketch as large as possible, but no larger than the outer circle. For large areas covered by trees or woods, draw only the outline and label the area “woods,” “orchard,” or whatever best describes it (Figure 2). In the lower part of the range card, indicate the firing position by placing a dot in the smallest arc.

b. Left and right limits. Draw lines from the firing position to reflect left and right limits (Figure 3). Number the left limit “1” and the right limit “2.”

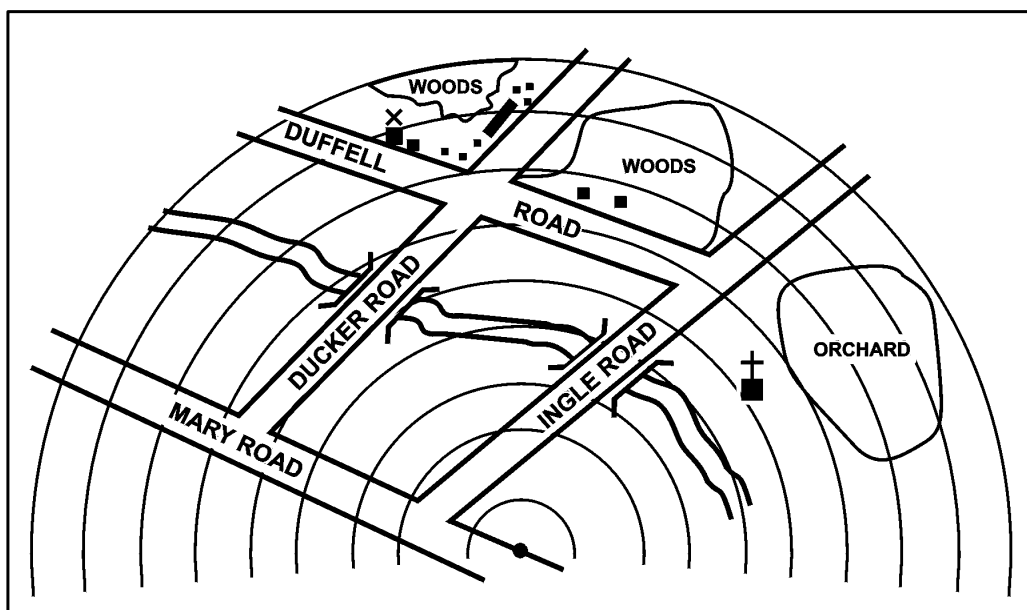


Figure 2. Sector sketch.

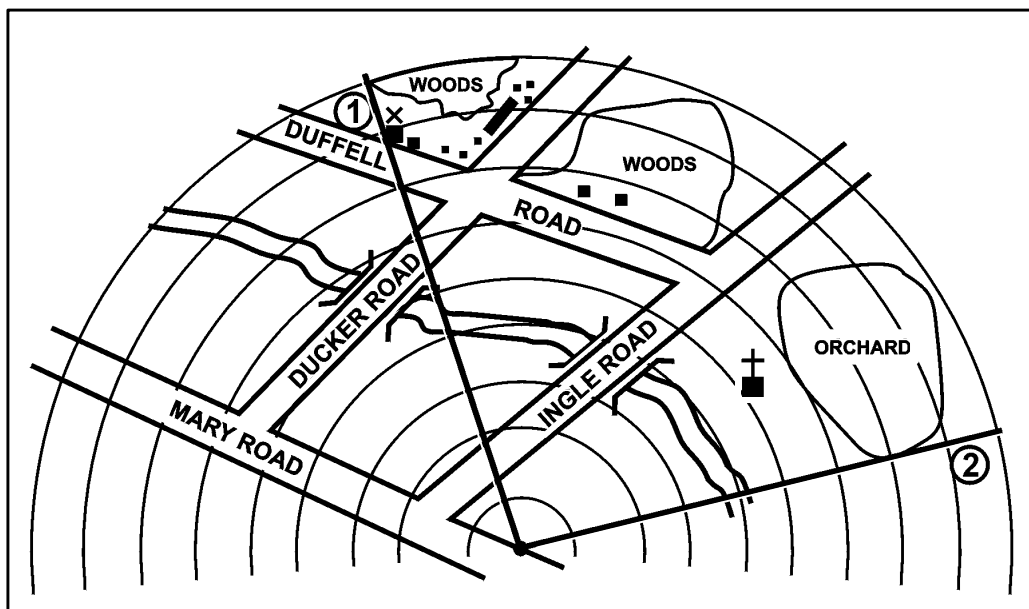


Figure 3. Left and right limits.

c. Maximum engagement line. If no limitations exist, ensure the maximum engagement line follows the arc of the circle representing the maximum engagement range (Figure 4). Draw the maximum engagement line in front of anything that will prevent firing to the maximum engagement range.

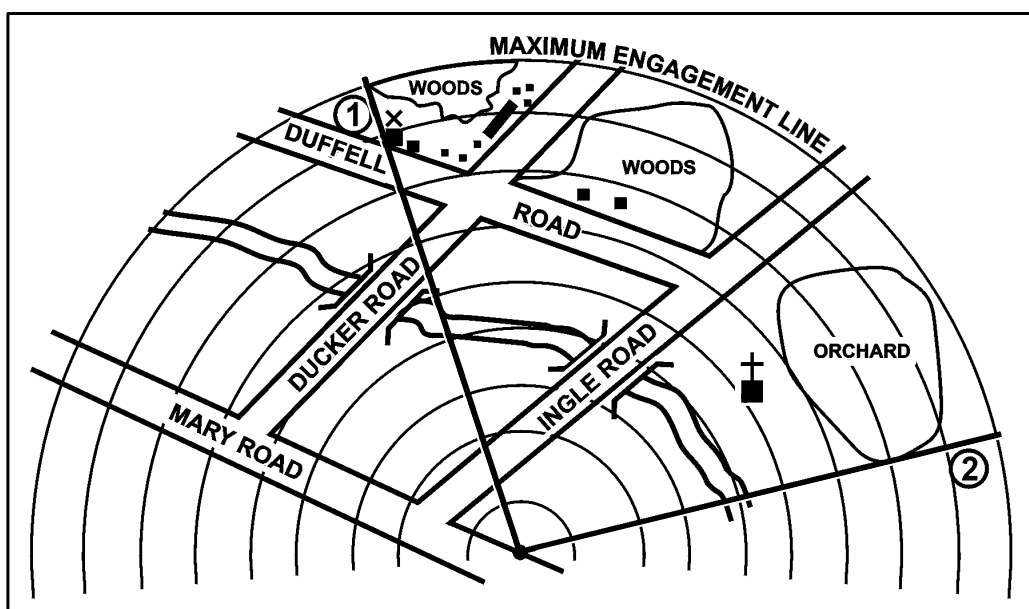
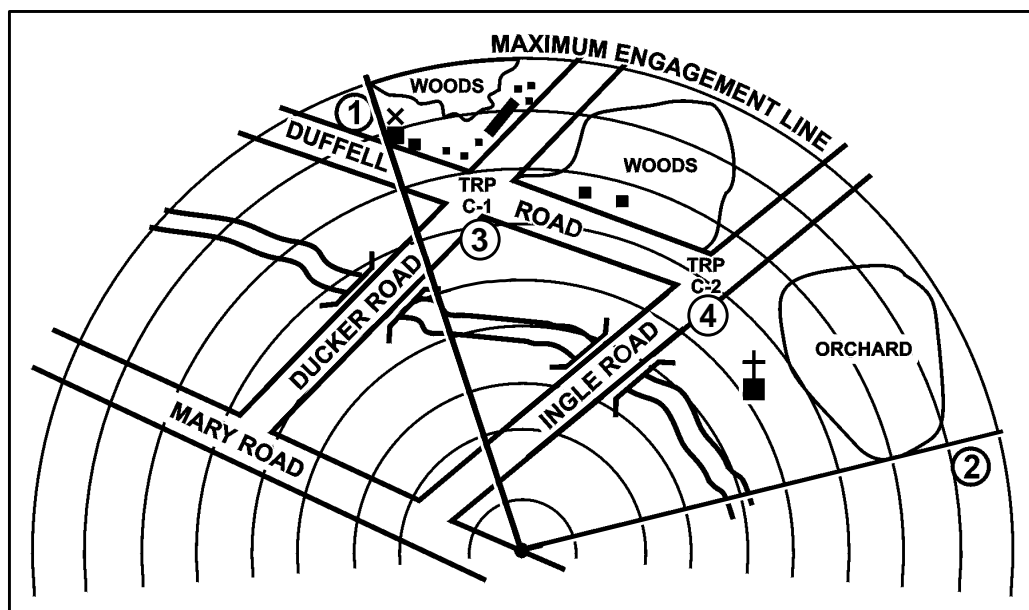


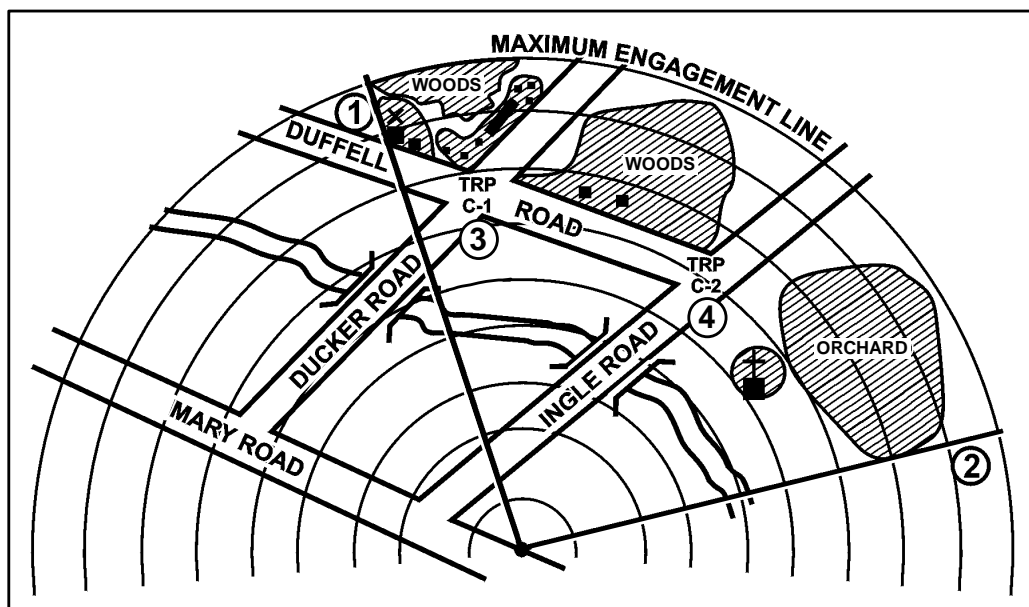
Figure 4. Maximum engagement line.

d. Target reference points. Place the TRP number(s) on the range card ([Figure 5](#)) and number them from left to right, beginning with the number “3.”



**Figure 5. Target reference points.**

e. Dead spaces. Place diagonal lines, or the words “dead space,” where significant dead space occurs ([Figure 6](#)).



**Figure 6. Dead spaces.**

f. Weapon reference point. Draw this as a line with a series of arrows. Extend the arrows from a known terrain feature. Aim the arrows at the weapon symbol. Number the WRP last—assign it a 6-digit grid. If you cannot find a terrain feature to use as a WRP, show the weapon's location as an 8-digit grid coordinate and write it in the REMARKS block on the range card (Figure 7).

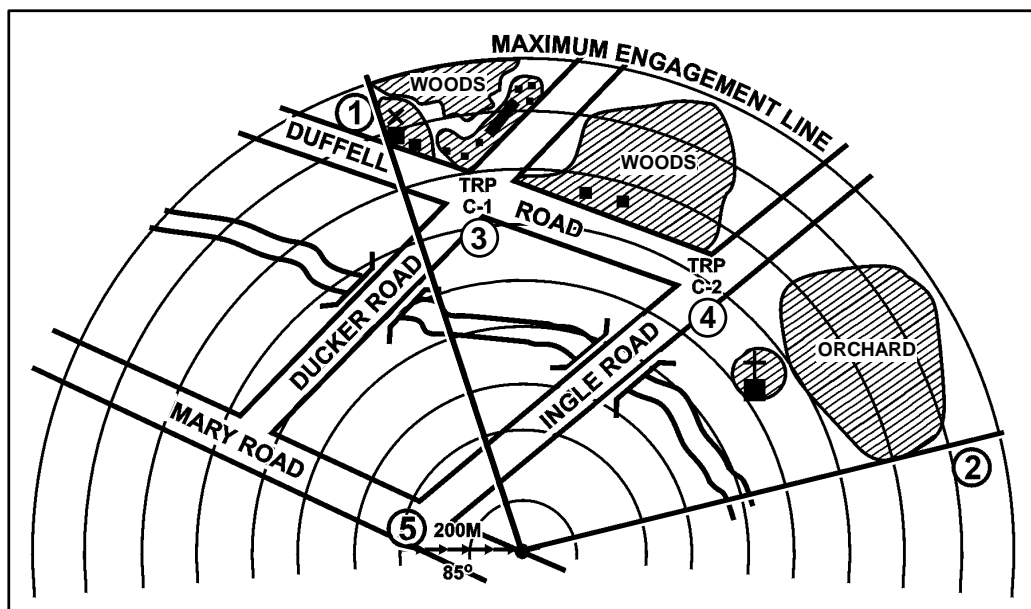


Figure 7. Gunner reference point.

g. Marginal information. Place this at the top of the range card (Figure 8).

(1) Unit description. Indicate up to company level only.

(2) Magnetic north. Orient the range card with the terrain and determine the direction of magnetic north with a compass. Write in the words, "MAGNETIC NORTH" and draw a magnetic north arrow using the straight edge of the compass.


EXAMPLE	STANDARD RANGE CARD	EXAMPLE
SQD _____ PLT _____ CO _____	This range card may be used for all types of direct-fire weapons.	 MAGNETIC NORTH

Figure 8. Example completed data section at top of range card.

h. Data section. This is at the bottom of the range card (Figure 9).

(1) POSITION IDENTIFICATION. Write in "primary" or "secondary."

(2) WEAPON. Write in the type of weapon: TOW, Dragon, Javelin, or 90-mm recoilless rifle.

(3) DATE. Enter the day and month.



DATA SECTION					
POSITION IDENTIFICATION Primary					DATE 24 May
WEAPON				EACH CIRCLE EQUALS 111 METERS	
NO	DIRECTION/ DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
REMARKS					

**Figure 9. Example completed data section at bottom of range card.**

(4) EACH CIRCLE EQUALS \_\_\_\_\_ METERS. Write in the distance in meters between the circles. To determine the distance, count the intervals from the weapon to the maximum engagement line. Divide the number of intervals into the range. This gives the distance between circles (Figure 10).

**EXAMPLE:** Dividing 1,000 meters by 7.5 intervals = 133 meters, which rounds down to 130 meters between circles.

(5) NO. Number as many blank rows as you have numbered items on the range card.

**EXAMPLE:** This example has five numbered locations, so number rows 1 through 5 in the NO column.

(6) DIRECTION/ DEFLECTION. List either the degrees or the azimuth from the azimuth bevel ring (improved TOW vehicle), but not both. Mark through either DIRECTION or DEFLECTION, whichever does not apply.

(7) ELEVATION. This applies only to ground-mounted machine guns with traversing and elevating mechanisms.

(8) RANGE. Indicate distance in meters from the weapon to the TRP or target engagement area.

(9) DESCRIPTION. Write “left limit” on the first line. Write in “right limit” on the second line. Write in the names of the other points numbered on the range card.

**EXAMPLE:** In this example, write on the third line, for number 3 on the range card, “TRP C-1, junction of Ducker and Duffell Roads,” and so forth.

i. Copies of range card. Draw two copies of each range card. Keep one copy at the firing position. The squad or section leader will normally pick up the second copy to prepare fire plans and coordinate final fires.

<b>STANDARD RANGE CARD</b>					
SQD _____ PLT _____ CO _____		<i>[You may use this range card for all types of direct-fire weapons.]</i>			 MAGNETIC NORTH
<div style="display: flex; justify-content: space-between; align-items: center;"> <span style="color: red; font-weight: bold; font-size: 1.2em;">EXAMPLE</span> <span style="color: red; font-weight: bold; font-size: 1.2em;">EXAMPLE</span> </div>					
<b>DATA SECTION</b>					
POSITION IDENTIFICATION <u>Primary</u>				DATE <u>24 May</u>	
WEAPON				EACH CIRCLE EQUALS <u>111 METERS</u>	
NO	DIRECTION/ DEFLECTION	ELEVATION	RANGE	AMMO	DESCRIPTION
1	346		1,000 M		Left limit
2	38		1,000 M		Right limit
3	350		672 M		TRP C-1 Junction of Ducker and Duffell Roads
4	18		672 M		TRP C-2 Junction of Ingle and Duffell Roads
5					
<b>REMARKS</b> WRP-RJ at GL 1632 1194, 85° at 200 M TRP C-1 Intersection Duffell and Ducker Roads.					

**Figure 10. Example completed range card.**

## EVALUATION PREPARATION

*Setup:* At the test site, provide all equipment and information given in the task conditions statement.

*Brief Soldier:* Tell the soldier he will be evaluated on his ability to correctly complete an antiarmor range card. Give him the following information: type of position, type of weapon, left and right limits, and TRPs.

## EVALUATION GUIDE

Performance Measures	Results	
1. Complete an antiarmor range card, to include—	P	F
a. An arrow between the reference point and the weapon position, including azimuth and distance.		
b. Left and right limits.		
c. All target engagement locations.		
d. TRPs, including the TRP number.		
e. A maximum engagement line.		
f. All prominent terrain features, both natural and man-made.		
g. All dead spaces.		
h. Unit, not to exceed company.		
i. Arrow for Magnetic North.		
j. Type of position.		
k. Type of weapon.		
l. Correct interval between circles.		
m. Date.		
n. The following data on all target engagement locations and TRPs:		
(1) Direction or deflection.		
(2) Range.		
(3) Description.		
(4) TRP number for all TRPs.		
2. Ensure that the range card is readable and not cluttered.	P	F
3. When asked, state that two copies are required.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

FM 23-34

FM 23-35

# **M9 PISTOL**

## **MAINTAIN AN M9 PISTOL 071-004-0001**

### **CONDITIONS**

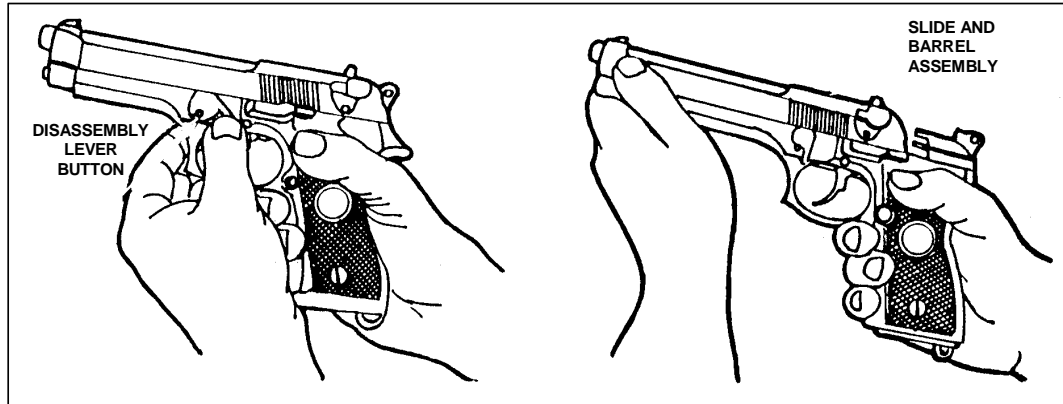
Given an M9 pistol with components (M12 or M7 holster, magazine, and ammunition pocket), 9-mm ammunition, cleaner lubricant preservative (CLP), lubricating oil arctic weather (LAW), lubricating oil semi-fluid (LSA), bore brush, wiping rags, M4 cleaning rod (a one-section handle and a swab holder), and small arms cleaning swabs.

### **STANDARDS**

Clean and lubricate M9 pistol and magazine; inspect parts; turn in unserviceable parts for maintenance; assemble pistol; ensure pistol is operational; clean and inspect ammunition for serviceability; and turn in unserviceable ammunition.

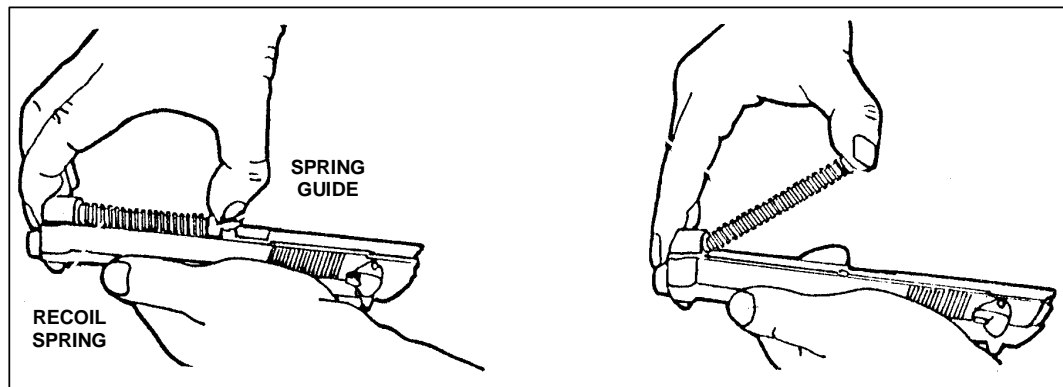
### **TRAINING AND EVALUATION Training Information Outline**

1. Clear the pistol.
  - a. Place the safety lever in the SAFE position.
  - b. Hold the pistol in the raised pistol position.
  - c. Depress the magazine release button; remove the magazine from the pistol.
  - d. Pull the slide to the rear; remove any chambered round.
  - e. Push the slide stop up, locking the slide to the rear.
  - f. Look into the chamber to make sure it is empty.
2. Disassemble the pistol and magazine.
  - a. Depress the slide stop and let the slide go forward.
  - b. With your right hand, hold the pistol with the muzzle slightly raised.
  - c. With your forefinger, press the disassembly lever button ([Figure 1](#)).
  - d. Rotate the disassembly lever downward until it stops.
  - e. Pull the slide and barrel assembly forward ([Figure 1](#)), and remove it from the receiver.



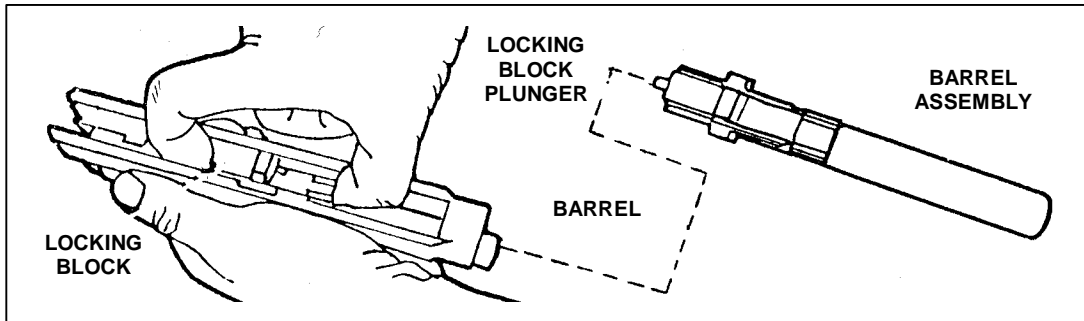
**Figure 1. Disassembly lever button.**

f. Slightly compress the recoil spring and spring guide. At the same time, lift them up and remove them, allowing the recoil spring to stretch slowly (Figure 2).



**Figure 2. Removal of the recoil spring and spring guide.**

g. Separate the recoil spring from the spring guide.  
h. Push in on the locking block plunger while pushing the barrel forward slightly. Lift and remove the locking block and barrel assembly from the slide (Figure 3).



**Figure 3. Removal of the locking block and barrel assembly.**

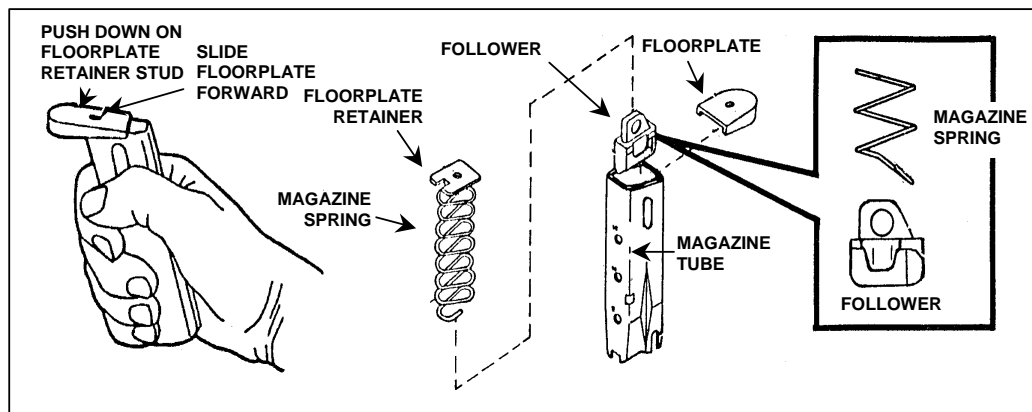
i. Disassemble the magazine ([Figure 4](#)).

- (1) Grasp the magazine firmly, with the floorplate up and the back of the magazine tube against the palm of your hand.
- (2) Depress the locking block to make the locking block plunger protrude.
- (3) Using the locking block plunger, push down on the floorplate retainer stud.
- (4) Slide the floorplate slightly forward with your thumb.

**CAUTION**

The magazine spring is under slight tension. Remove the magazine floorplate carefully.

- (5) While removing the floorplate, use your thumb to keep pressure on the magazine spring.
- (6) Remove the floorplate retainer, the magazine spring, and the follower from the magazine tube.
- (7) Remove the magazine spring from the follower.
- (8) Remove the floorplate retainer from the magazine spring.



**Figure 4. Disassembly of the magazine.**

3. Clean the pistol and magazine.

**CAUTION**

Use the bore brush to clean only the bore. Using it on any other part of the pistol would cause damage.

- a. Slide assembly.
  - (1) Clean the assembly with cloth. Use CLP on a soft brush to remove excess dirt and carbon.
  - (2) Wipe dry with a clean cloth.
- b. Barrel assembly.
  - (1) Attach a bore brush to a cleaning rod. Moisten the bore brush with CLP and insert it into the chamber end of the barrel. Make sure the brush completely clears the muzzle before you pull it back through the bore. Repeat this procedure several times to loosen carbon deposits.
  - (2) To clean and dry the barrel, push a clean swab through the bore. Repeat as necessary with fresh swabs, until a swab comes out clean.
  - (3) Clean locking block with a soft brush.
  - (4) Clean the recoil spring and spring guide with CLP and a soft brush or cloth.
- c. Receiver assembly. Wipe the receiver assembly clean with a cloth and, if needed, a soft brush.
- d. Magazine ([Figure 4](#)).
  - (1) Wipe the magazine tube and the follower with CLP, a cloth, and a soft brush.
  - (2) Clean the magazine spring, floorplate retainer, and floorplate with a clean cloth.
- e. Holster. Remove dirt from exterior with stiff brush. Wipe interior with clean cloth.
- f. Ammunition. If ammunition gets wet or dirty, clean it and remove corrosion from it at once using a dry cloth.

4. Inspect for serviceability.

- a. Slide assembly.
  - (1) Check to ensure the ambidextrous safety moves freely.
  - (2) Check the firing block for damage.
  - (3) Check the rear sight for looseness.
- b. Barrel assembly.
  - (1) Inspect the bore and chamber for pitting or obstructions.
  - (2) Check the locking block plunger to ensure the locking block moves freely.
  - (3) Inspect the locking lugs for cracks and burrs.
- c. Recoil spring and recoil spring guide.
  - (1) Check recoil spring to ensure it is not bent or damaged.
  - (2) Check recoil spring to ensure it is straight and free of cracks and burrs.
- d. Receiver assembly.
  - (1) Check for bends, chips, and cracks.
  - (2) Check to ensure the slide stop and magazine stop move freely.
  - (3) Check the guide rails for excessive wear, burrs, cracks, or chips.



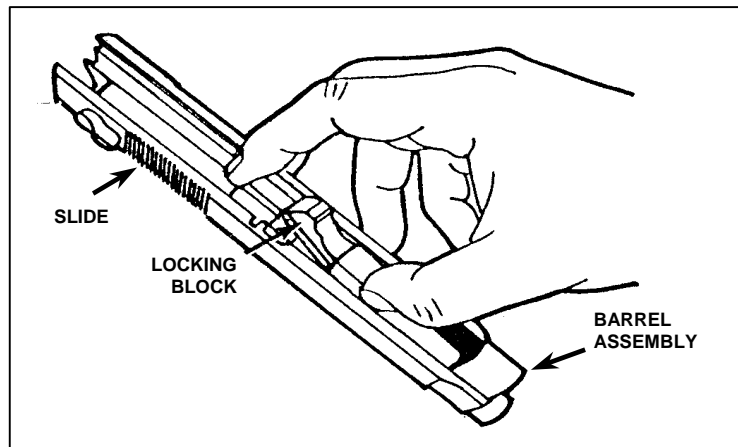
- e. Magazine assembly (Figure 4).
    - (1) Check for damage to the spring and follower.
    - (2) Inspect magazine lips to ensure they are not bent excessively and to ensure they have no cracks and burrs.
    - (3) Check to ensure the magazine tube is not bent.
  - f. Ammunition.
    - (1) Check for damaged or corroded ammunition. Turn in heavily corroded or damaged ammunition.
    - (2) Check to ensure ammunition is free of oil and grease.
5. Lubricate the pistol and magazine.

**NOTES:**

- 1. CLP, LSA, and LAW are the only lubricants authorized for this pistol.
- 2. You can use CLP and LSA interchangeably.
- 3. Before firing, remove excess lubricant from the bore.

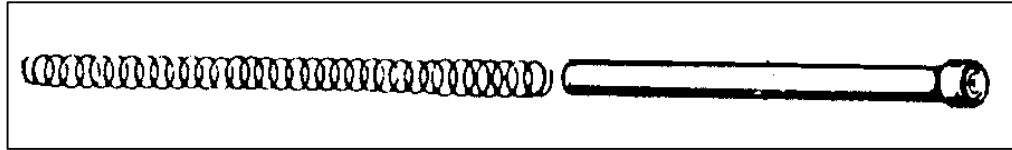
- a. Lubricate all parts with a light coat of LSA or CLP at temperatures above minus 10 degrees Fahrenheit, or LAW at temperatures below plus 10 degrees Fahrenheit.
- b. Do not mix LAW with other lubricants.

6. Assemble the pistol (Figure 5).
- a. Grasp the slide with the bottom facing up.
  - b. With the other hand, grasp the barrel assembly with the locking block facing up.



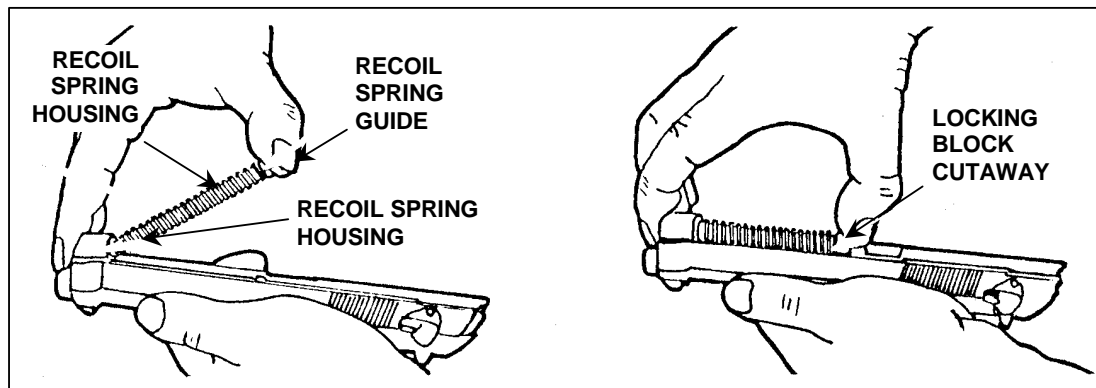
**Figure 5. Insertion of the barrel assembly.**

- c. Insert the muzzle into the forward end of the slide. At the same time, lower the rear of the barrel assembly by slightly moving the barrel downward with light thumb pressure. The barrel will fall in place.
- d. Insert the recoil spring guide into the recoil spring (Figure 6).



**Figure 6. Recoil spring and spring guide.**

e. Insert the end of the recoil spring and the recoil spring guide into the recoil spring housing. At the same time, compress the recoil spring and lower the spring guide until it seats fully on the locking block cutaway ([Figure 7](#)).



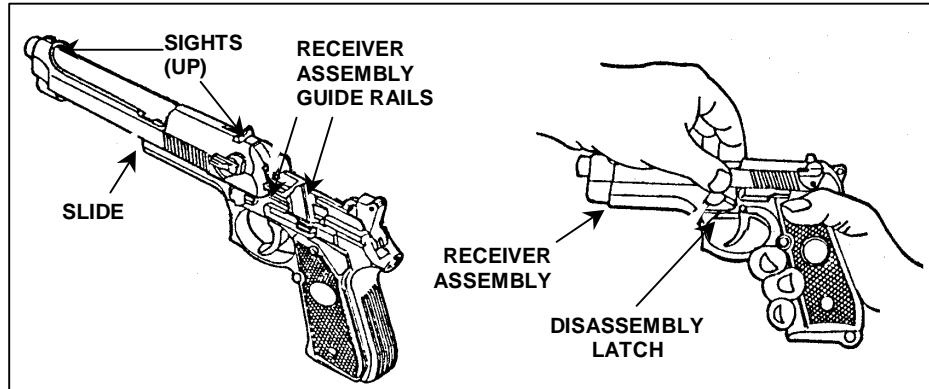
**Figure 7. Insertion of the recoil spring and guide.**

**CAUTION**

Be sure that the hammer is uncocked and firing pin block lever is in the down position. If the hammer is cocked, carefully and manually lower the hammer. Do not pull the trigger while placing the slide onto the receiver.

f. Push the firing pin block lever down. Grasp the slide and barrel assembly with the sights up, and align the slide on the receiver assembly guide rails ([Figure 8](#)).

g. Push until the rear of the slide is a short distance beyond the rear of the receiver assembly and hold. At the same time, rotate the disassembly latch lever upward. A click indicates a positive lock ([Figure 8](#)).



**Figure 8. Final assembly.**

h. Assemble the magazine (Figure 4).

- (1) Insert the follower into the top coil of the magazine spring. Make sure the notches on the follower and magazine tube are on the same side.
- (2) Insert the magazine spring with follower into magazine tube.
- (3) Turn the magazine bottom up, with its back side against the palm of the hand. Attach and center the floorplate retainer on the bottom spring coil.

**CAUTION**

After inserting the magazine spring, keep tension on it with your thumb. Be careful not to place the lips of the magazine tube on a hard surface while you reassemble the magazine.

- (4) Push and hold the magazine spring and floorplate retainer down. At the same time, slide the floorplate over the side walls until it seats fully.
- (5) Carefully insert the magazine into the pistol well. You will hear a click when it locks into position.

**WARNING**

**Make sure the pistol is clear and unloaded.**

7. Perform a function check.

**EVALUATION PREPARATION**

*Setup:* At the test site, provide a field table with all the equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier that he must clear, disassemble, clean, inspect, lubricate, assemble, and perform a function check on the weapon.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Clear the pistol.	P	F
2. Disassemble the pistol and magazine without damaging any parts.	P	F
3. Clean the pistol, components, and ammunition.	P	F
4. Inspect the pistol, components, and ammunition for defects.	P	F
5. Lubricate pistol and magazine correctly.	P	F
6. Assemble pistol and magazine in correct sequence correctly.	P	F
7. Perform a function check.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
TM 9-1005-317-10	None

## **PERFORM A FUNCTION CHECK ON AN M9 PISTOL**

### **071-004-0002**

#### **CONDITIONS**

Given an M9 pistol with a magazine.

#### **STANDARDS**

Perform operational checks in correct sequence and determine whether the M9 pistol will function correctly or not.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

#### **WARNING**

**Ensure the pistol is clear before you perform a function check.**

1. Place the safety lever in SAFE position.
2. Insert the empty magazine into the magazine well.
3. Retract the slide fully, then release it. The slide should lock to the rear.
4. Depress the slide stop and allow the slide to return fully forward. At the same time, the hammer should fall to the full forward position.
5. Squeeze and release the trigger. The firing pin block should move up and down. The hammer should not move.
6. Place the safety lever in the FIRE position.
7. To check the double action, squeeze the trigger. The hammer should cock and fall.
8. Squeeze the trigger again, and hold it to the rear. While holding the trigger to the rear, manually retract and release the slide. Release the trigger. You should hear a click, but the hammer should not fall.
9. To check the single action, squeeze the trigger. The hammer should fall.

10. If the pistol functions as indicated during the checks, it is operational.

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide the equipment listed in the task conditions statement.

*Brief Soldier:* Tell the soldier to perform a function check based on the steps in this task and to determine whether or not the M9 pistol functions correctly.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Place the safety lever in the SAFE position.	P	F
2. Insert the empty magazine into the magazine well.	P	F
3. Retract the slide fully, then release it.	P	F
4. Depress the slide stop and allow the slide to return fully forward.	P	F
5. Squeeze and release the trigger.	P	F
6. Place the safety lever in FIRE position.	P	F
7. Check the double action by squeezing the trigger.	P	F
8. Squeeze the trigger again and hold it to the rear, at the same time manually retracting and releasing the slide. Release the trigger. You should hear a click. The hammer should <i>not</i> fall.	P	F
9. Check the single action by squeezing the trigger. <i>The hammer should fall.</i>	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

TM 9-1005-317-10

### Related

None

## LOAD AN M9 PISTOL 071-004-0003

### CONDITIONS

Given an unloaded M9 pistol and a separate magazine loaded with M9 ammunition.

### STANDARDS

Load the M9 pistol.

### TRAINING AND EVALUATION Training Information Outline

#### WARNING

**The M9 pistol has single and double action firing modes. When the safety is set to FIRE, squeezing the trigger will automatically cock and fire the pistol (this is the double-action mode).**

***Keep your finger away from the trigger until you intend to fire.***

1. Place safety lever in SAFE position.
2. Insert the loaded magazine into the pistol's magazine well until you hear a click when the magazine seats fully.
3. Point the pistol in a safe direction (usually at the target or skyward).
4. Retract the slide fully and release it. This strips a cartridge from the magazine and chambers it.

### EVALUATION PREPARATION

*Setup:* At the test site, provide the equipment listed in the task conditions statement. You can use dummy rounds to evaluate this task.

*Brief Soldier:* Tell the soldier to load the M9 pistol so it will fire a round when he squeezes the trigger.



**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Place the safety lever in SAFE position.	P	F
2. Insert the loaded magazine into the magazine well.	P	F
3. Point the pistol in a safe direction (usually at the target or skyward).	P	F
4. Retract and release the slide to chamber a cartridge from the magazine.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
TM 9-1005-317-10	None

## UNLOAD AN M9 PISTOL

### 071-004-0004

#### CONDITIONS

Given an M9 pistol loaded with rounds.

#### STANDARDS

Correctly remove magazine and ammunition from the pistol; remove all the rounds from the magazine; and ensure the pistol safety lever is in the SAFE position.

#### TRAINING AND EVALUATION

##### Training Information Outline

#### WARNING

**The M9 pistol will fire single or double action. With the safety in the FIRE position, squeezing the trigger automatically cocks and fires the pistol. This is the double-action mode of firing the pistol.**

***Keep your finger away from the trigger unless you intend to fire.***

1. Remove the magazine and the ammunition from the pistol.
  - a. Place the safety lever in the SAFE position.
  - b. Depress the magazine release button, and remove the magazine from the pistol.
  - c. Point the pistol in a safe direction (usually at the target or skyward).
  - d. Retract the slide fully to remove the chambered cartridge.
  - e. Lock the slide to the rear using the slide stop. Visually inspect the chamber to make sure it is empty.
  - f. Release the slide. Ensure the safety lever is in the SAFE position.
2. Remove the ammunition from the magazine.
  - a. With one hand, hold the magazine upright, front end forward. With your thumb, firmly press down on the cartridge rim, and push forward. As the cartridge moves forward, tip the forward end of it up and out with your index finger.
  - b. Repeat the above step until the magazine is empty.

#### EVALUATION PREPARATION

*Setup:* At the test site, provide the equipment listed in the task conditions statement. You can use dummy rounds to evaluate this task.

*Brief Soldier:* Tell the soldier to unload the M9 pistol and remove all ammunition from the magazine.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Remove magazine and ammunition from the pistol.	P	F
2. Remove ammunition from magazine.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
TM 9-1005-317-10	None

## **ENGAGE TARGETS WITH AN M9 PISTOL**

### **071-004-0006**

#### **CONDITIONS**

Given an M9 pistol and one or more magazines loaded with 9-mm ammunition.

#### **STANDARDS**

Applying the correct M9 target engagement techniques, engage hostile targets.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

1. Identify the target(s). The most likely target is an enemy soldier on foot.
2. Load the pistol IAW Task 071-004-0003, Load an M9 Pistol.
3. Apply the fundamentals of quick fire.

**NOTE:** To fire quickly without using the pistol sights, use the pistol as an extension of your arm.

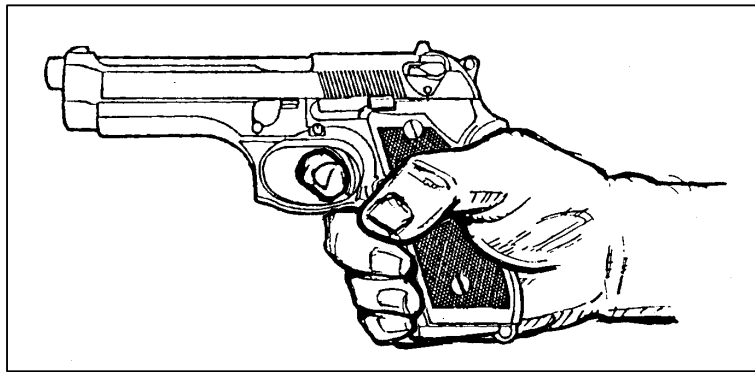
- a. To use the pistol grip, hold the pistol in your nonfiring hand. Form a “V” with the thumb and forefinger of your firing hand.
- b. Place the pistol in the “V,” with the sights in line with your firing arm.
- c. Hold your upper arm close to your body, and your forearm at about a 45-degree angle.
- d. Wrap your lower three fingers around the grip, putting equal pressure to the rear with all three ([Figure 1](#)).
- e. Place your thumb alongside the pistol without applying any pressure.
- f. Place your trigger finger on the trigger so you can pull it to the rear.
- g. Tightly grip the pistol until your hand begins to tremble. Relax until the trembling stops. At this point, you have applied the necessary pressure for a solid grip.

**NOTE:** If you relax any of your three fingers on the grip, you must reapply the entire grip.



**Figure 1. Pistol ready position, one-hand grip.**

4. Choose one of the following supported or unsupported grips:
- Supported grip. The only supported grip is the one-hand grip ([Figure 2](#)). Begin by gripping the weapon as previously described ([Task Step 3](#)). Allow the thumb of your firing hand to rest without pressure beside the weapon. Place your trigger finger, between the tip and the second joint, on the trigger, so you can squeeze the trigger to the rear. Your trigger finger must work independently of your other fingers.

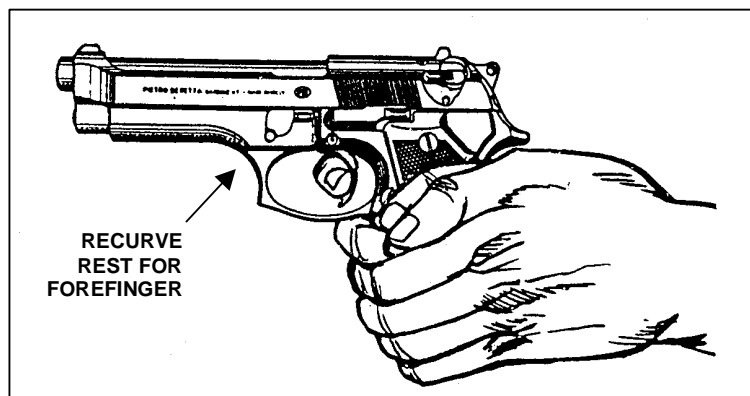


**Figure 2. One-hand grip.**

- Unsupported grips. You may use any of three nonfiring hand grips to support your firing hand (Figures 3, 4, and 5).

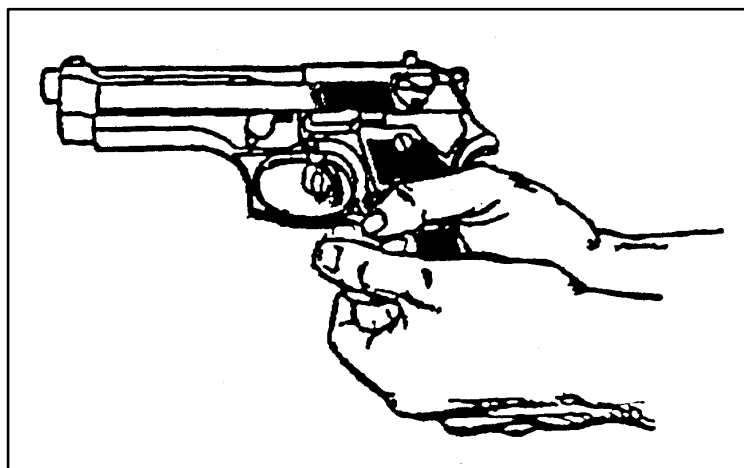
(1) Fist grip ([Figure 3](#)). Begin by gripping the weapon as previously described ([Task Step 3](#)). Firmly close the fingers of your nonfiring hand over the fingers of your firing hand. Make sure the index finger of your nonfiring hand is between the middle finger of your firing hand and the guard. Place your nonfiring thumb beside your firing thumb.

**NOTE:** The M9 pistol has a recurved trigger guard, which allows you to place the index finger of your nonfiring hand on the front of the trigger guard, if you wish.



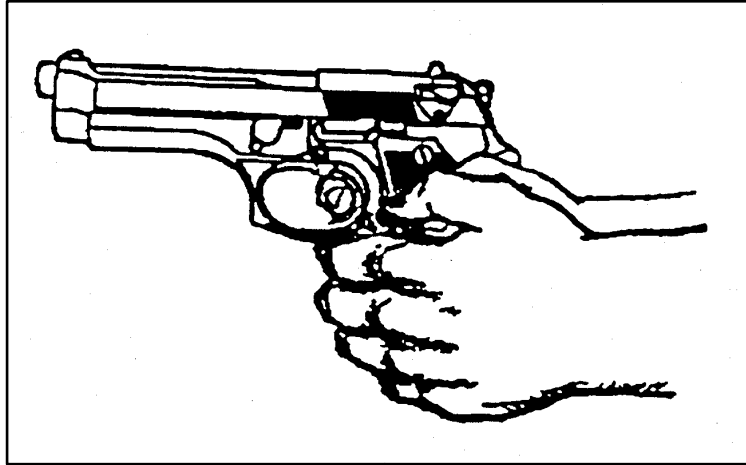
**Figure 3. Fist grip.**

(2) Palm-supported grip ([Figure 4](#)). Begin by gripping the weapon as previously described ([Task Step 3](#)). Place your nonfiring hand under your firing hand. Wrap your nonfiring fingers around the back of your firing hand. Place your nonfiring thumb over the middle finger of your firing hand.



**Figure 4. Palm-supported grip.**

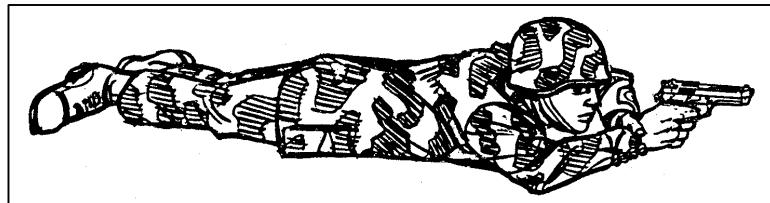
(3) Weaver grip ([Figure 5](#)). Apply this grip the same as the fist grip, but wrap your nonfiring thumb over your firing thumb.



**Figure 5. Weaver grip.**

5. Select the most stable firing position with the best cover. Consider the following positions:

- a. Prone ([Figure 6](#)). To assume the prone position—
  - (1) Lie flat on the ground, facing the target.
  - (2) Extend your arms to the front, with your firing arm locked.
  - (3) Wrap your nonfiring hand around either the wrist or the fingers of your firing hand.
  - (4) Face forward. Keep your head down between your arms and behind the weapon.



**Figure 6. Prone position.**

- b. Standing-with-support position ([Figure 7](#)). To assume this position—
  - (1) Use available cover for support. For example, stand behind a tree or wall.
  - (2) Stand behind a barricade, with your firing side in line with the edge of the barricade.
  - (3) Place the palm of your nonfiring hand at eye level on the edge of the barricade, and extend your thumb past the edge of the barricade.
  - (4) Lock the elbow of your firing arm. Rest your forearm on the extended thumb of your nonfiring hand.
  - (5) Move the foot on your nonfiring side forward until your toe touches the bottom of the barricade.
- c. Kneeling ([Figure 8](#)). To assume this position—

(1) Use available cover, such as a low wall, rocks, or a vehicle that you can fire over, for support.

(2) Place your firing knee on the ground. Put your left knee down to fire left-handed, or your right knee down to fire right-handed.

(3) Bend your other knee. Place the foot on your nonfiring side flat on the ground, pointing toward the target. Extend your arms over available cover and use it for support.

(4) Lock the wrist and elbow of your firing arm.

(5) Wrap your nonfiring hand around your firing fist or wrist to support your firing arm.

**NOTE:** This position could silhouette you, making you a better target. When possible, fire around the sides of walls, rocks, or vehicles instead of over them.

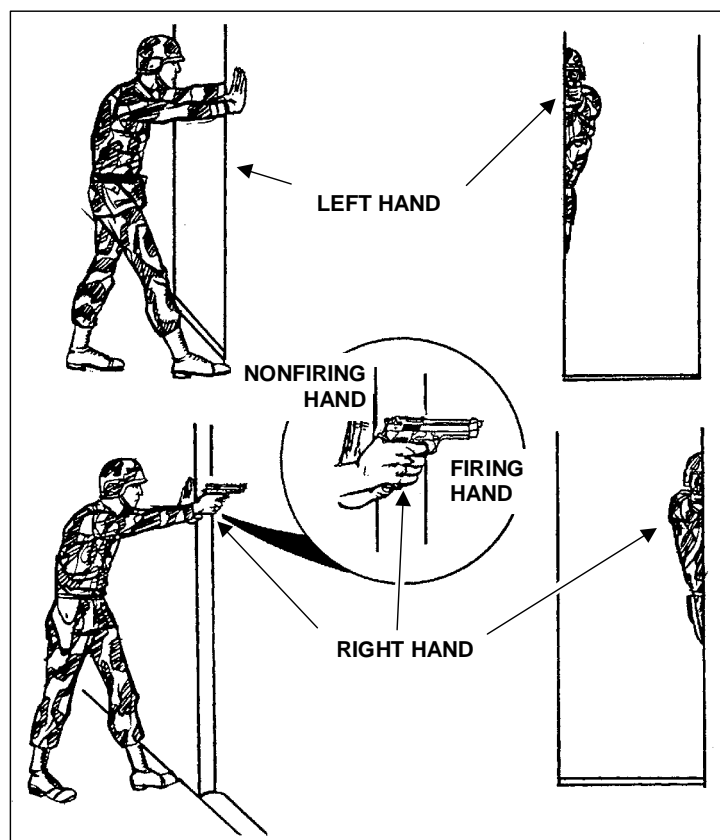
d. Standing-without-support position ([Figure 9](#)). To assume this position—

(1) Face the target.

(2) Place your feet a comfortable distance apart.

(3) Wrap your nonfiring hand around the fist or wrist of your firing hand. Lock the wrist and elbow of your firing arm toward the target.

(4) Keep your body straight.



**Figure 7. Standing-with-support position.**



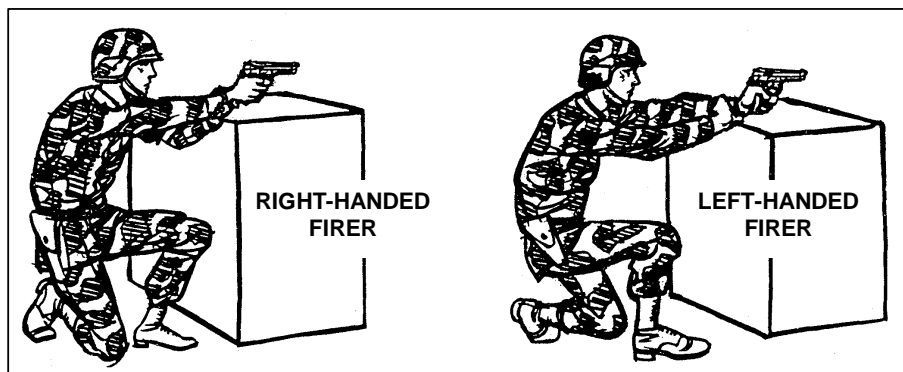


Figure 8. Kneeling position.



Figure 9. Standing-without-support position.

e. Crouching ([Figure 10](#)). This position is the same as the standing-without-support position, except you must bend your knees slightly. Balance by leaning forward at the waist.

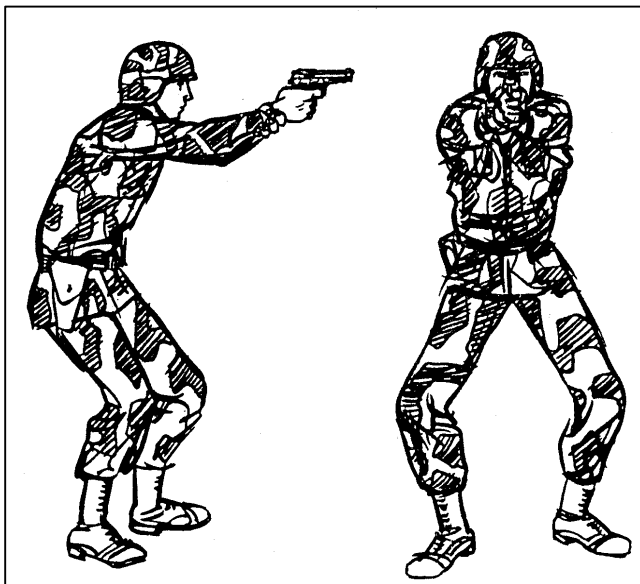
6. Apply the fundamentals of marksmanship.

a. Pistol grip. To obtain a proper pistol grip—

(1) Place the pistol in the “V” formed by the thumb and forefinger of your firing hand. Line the sights up with your firing arm. Wrap your lower three fingers around the pistol. Grip with your middle finger under the trigger guard. Exert equal pressure on all three lower fingers to the rear, back through the wrist and forearm ([Figure 1](#)).

(2) Rest your thumb on top of your middle finger when gripping the pistol. Do not exert any downward pressure.

(3) Grip the pistol firmly, but not so firmly that your hand trembles.



**Figure 10. Crouching position.**

b. Sight alignment. To sight properly—

(1) Align the front sight blade in the rear sight notch so that an equal amount of light shows on either side of the front sight. Ensure the top of the front and rear sight are even.

(2) Relax as much as possible.

(3) Maintain the correct sight alignment, and focus on the front sight.

(4) Squeeze the trigger with a steadily increasing pressure straight to the rear, taking care not to disturb the sight alignment until after the hammer falls.

**NOTE:** When there is more than one target, choose the target that presents the greatest danger. This is often the closest target.

## EVALUATION PREPARATION

*Setup:* Evaluate this task during daylight on a 9-MM Combat Pistol Qualification Course. Provide the soldier with 8 magazines and 52 rounds of live ammunition.

*Brief Soldier:* Tell the soldier to use his own pistol. Tell the soldier he must hit 25 of the 30 targets using correct engagement techniques.

## EVALUATION GUIDE

Performance Measures	Results	
1. Assume firing positions.	P	F
a. Assume the prone position.		
b. Assume the standing-with-support position.		
c. Assume the standing-without-support position.		
d. Assume the kneeling position.		
e. Assume the crouching position.		
2. Apply the fundamentals of marksmanship.	P	F
3. Engage the targets.	P	F
a. From the prone position.		
b. From the standing-with-support position.		
c. From the standing-without-support position.		
d. From the kneeling position.		
e. From the crouching position.		

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
None	FM 23-35
	TM 9-1005-317-10

## **CORRECT MALFUNCTIONS OF AN M9 PISTOL**

### **071-004-0005**

#### **CONDITIONS**

Given an M9 pistol, loaded magazines with 9-mm ammunition, cleaner lubricant and preservative (CLP), lubricating oil arctic weather (LAW), lubricating oil semi-fluid (LSA), bore brush, wiping rags, M4 cleaning rod (handle with 1 section and a swab holder), and small arms cleaning swabs.

#### **STANDARDS**

Without damaging the pistol, eliminate malfunctions caused by faulty action of either the pistol or the ammunition while in an environment that requires engagement of targets.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

#### **WARNING**

**During the following procedures always keep the pistol pointed in a safe direction.**

1. Perform immediate action.
  - a. When the slide is fully forward and the pistol fails to fire, apply immediate action as follows:
    - (1) Ensure the safety lever is in FIRE position.
    - (2) Squeeze the trigger again.
    - (3) If the pistol does not fire, ensure that the magazine is fully seated, retract the slide to the rear, and release.
    - (4) Squeeze the trigger.
    - (5) If the pistol still does not fire, remove the magazine and retract the slide to eject the chambered cartridge. Insert a new magazine, retract the slide, and release to chamber another cartridge.
    - (6) Squeeze the trigger.
    - (7) If the pistol does not fire, replace the ammunition.
    - (8) If the pistol fails to fire again, clear the pistol and perform remedial IAW step 2.
  - b. When the slide is not fully seated forward, remove finger from the trigger. With the other hand, try to push the slide fully forward. If the slide will not move forward, proceed as follows:
    - (1) Place safety lever in SAFE position.
    - (2) Remove the magazine.
    - (3) Grasp the slide and retract it to the rear, locking it with the slide stop.
    - (4) Inspect the chamber and remove any obstructions.
    - (5) Insert another loaded magazine into the pistol.

- (6) Release the slide.
  - (7) Place the safety lever in the FIRE position, aim, and squeeze the trigger.
  - (8) If pistol does not fire, clear the pistol and perform remedial action IAW step 2.
- 2. Perform remedial action.
    - a. Ensure the pistol is clear.
    - b. Disassemble the pistol and inspect for dirty, corroded, missing, or damaged parts.
    - c. Clean dirty or corroded parts. Replace missing or damaged parts.
    - d. Lubricate and assemble the pistol.
    - e. Inspect magazine for damaged parts. Replace magazine if necessary.
    - f. Check for dirty or damaged ammunition. Clean or replace ammunition.
    - g. Perform a function check.
    - h. Load the pistol and try to fire.
    - i. If the pistol does not fire, clear the pistol and notify your supervisor.

### EVALUATION PREPARATION

*Setup:* Provide equipment and materials listed in conditions. Use performance steps in the training outline to evaluate performance of the task.

*Brief Soldier:* Tell the soldier that the pistol has stopped firing. Tell the soldier to perform immediate and remedial action on the pistol.

### EVALUATION GUIDE

Performance Measures	Results	
1. Perform immediate action.	P	F
2. Perform remedial action.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

Required	Related
None	TM 9-1005-317-10

## **M16A1/A2 RIFLE**

### **CONSTRUCT FIELD-EXPEDIENT FIRING AIDS FOR AN M16A1 OR M16A2 RIFLE 071-311-2006**

#### **CONDITIONS**

As a member of a squad in a defensive position, given an M16A1 or M16A2 rifle, a magazine and ammunition, sticks or rocks and boards available in the area, instructions on target location(s) within the individual's sector of fire, and left and right limits of the sector.

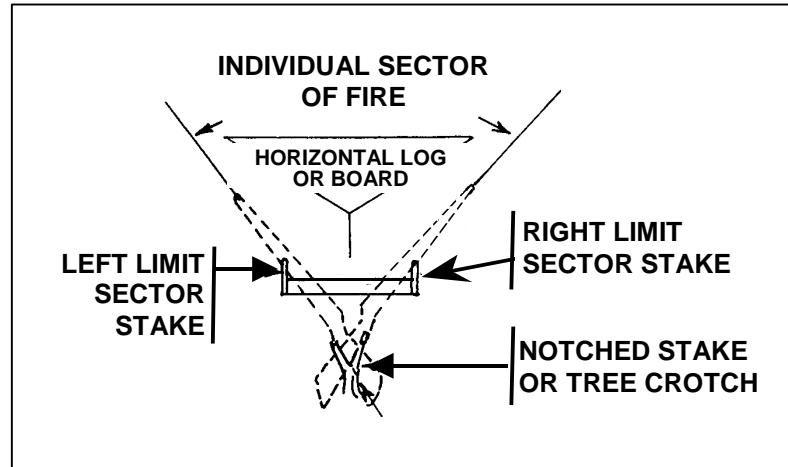
#### **STANDARDS**

Properly emplace and align aiming and sector stakes on identifiable probable enemy avenues of approach, assault positions, and automatic weapons positions. Include left and right sector stakes to mark the sector of fire. When stakes are properly placed, they allow placement of rounds in selected target areas or positions. All fires are within the sector of fire.

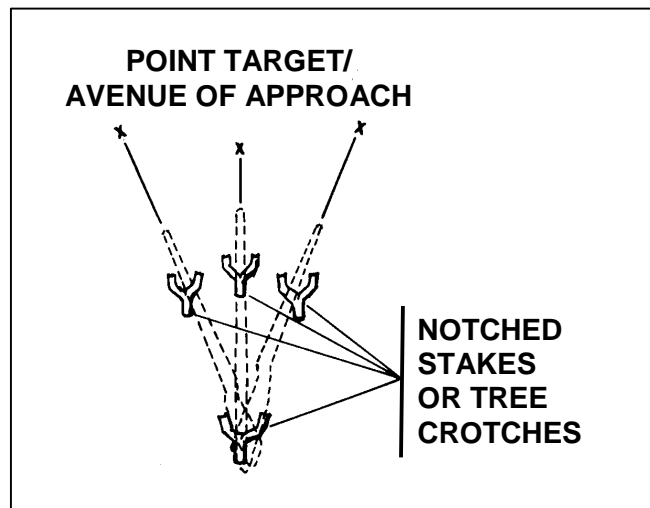
#### **TRAINING AND EVALUATION** **Training Information Outline**

- NOTES:**
1. Use sector stakes to control the weapon within a sector of fire during limited visibility.
  2. Use aiming stakes to align a weapon on a known point or target during limited visibility.
- 
1. Sector stakes. Sector stakes mark the left and right limits of your sector of fire (Figure 1).
    - a. Use tree limbs 1 to 1 1/2 inches in diameter or pieces of an ammunition box about 18 inches long for the sector stakes.
    - b. Ensure the stakes are sturdy; they must stick out of the ground far enough to keep you from pointing and firing your rifle out of the sector.
    - c. You must also drive the stakes far enough into the ground that the rifle will not knock them down if it hits them.
  2. Aiming stakes. During limited visibility, aiming stakes help in placing fire on avenues of approach or on specific targets.
    - a. Locate probable enemy positions or likely avenues of approach within your sector.

- b. Select forked tree limbs 12 to 14 inches long.
- c. Drive one stake into the ground near the edge of the fighting position. The stock of your rifle rests on this stake. The stake should be high enough to allow the rifle stock to fit comfortably against the gunner's shoulder.
- d. Place additional stakes forward of the stock stake and align each with a target or avenue of approach. Firmly drive each stake into the ground. Adjust the stakes so that, in a firing position, when the rifle is placed on the stock and forward stakes, the fire will strike its intended target (Figure 2). To fire, hold your shoulder firmly against the butt plate and the barrel in the aiming stakes.



**Figure 1. Sector stakes.**



**Figure 2. Aiming stakes.**

**NOTE:** The soldier must hold the weapon in the exact position he held it when he positioned the stakes.

## EVALUATION PREPARATION

*Setup:* At the test site, provide a prepared fighting position, an M16A1 or M16A2 rifle, one magazine with ammunition, forked stakes and sticks. Show the soldier his sector of fire and the target(s) to be laid on.

*Brief Soldier:* Tell the soldier that he must emplace the M16A1 or M16A2 rifle using the field-expedient method with the materials provided.

## EVALUATION GUIDE

### Performance Measures

### Results

- |  |   |   |
|--|---|---|
| 1. Emplace the sector stakes so that the rifle cannot be fired outside the assigned sector of fire, and so that the stakes cannot be knocked down when touched with the rifle. | P | F |
| 2. Emplace the aiming stakes so each target is hit when the rifle is fired. The aiming stakes should provide a stable rest for the rifle.                                      | P | F |

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

TM 9-1005-317-10

### Related

FM 21-75



## **ZERO A NIGHT VISION SIGHT AN/PVS-4 TO AN M16A1 OR M16A2 RIFLE 071-315-2307**

### **CONDITIONS**

Given an AN/PVS-4 mounted on a zeroed M16A1 or M16A2 rifle, a magazine with 18 rounds of ammunition, a silhouette target (with a 25-meter zeroing target attached) 25 meters from the firing point, and sandbags.

**NOTE:** Ensure that the AN/PVS-4 has the M16 M203 sight reticle installed.

### **STANDARDS**

Place the center of a three-round shot group 7 centimeters below the target aiming point.

**NOTE:** You may zero the sight during daylight or dark. If in daylight, use the daylight cover.

### **TRAINING AND EVALUATION** **Training Information Outline**

#### **CAUTION**

Prolonged use of the sight under high light without a daylight cover will damage the image-intensifier assembly.

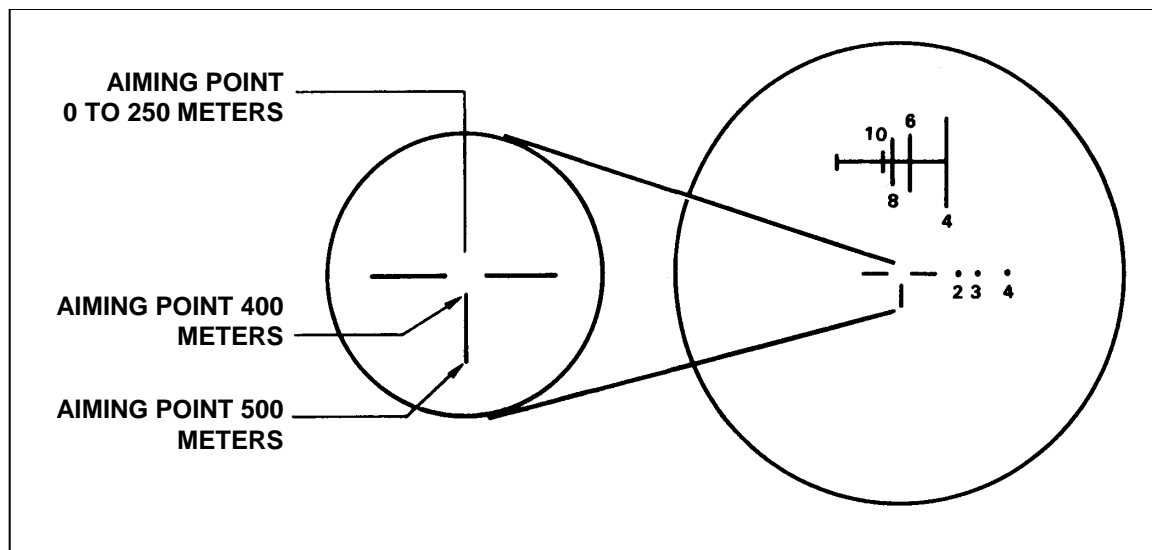
1. Assume a good prone-supported position 25 meters from the target.
2. Place the sight into operation (see Task 071-315-0003, Operate a Night Vision Sight AN/PVS-4).

#### **WARNING**

**To prevent eye injury from weapon recoil, attach the eyeguard to the sight before firing your weapon.**

3. Adjust the azimuth and elevation controls so that the reticle aiming point is about in the center of the sight's field of view.
4. Fire three rounds to seat the sight on your weapon. Fire the rounds into a safe area; try not to hit the zero target. Retighten the mounting knob.

5. Place the zeroing range aiming point of the reticle on the target aiming point; fire three rounds to obtain a good shot group (Figure 1). Use either the M16A1 25-meter zero target (NSN 6920-01-167-1392) shown in Figure 2 or the M16A2 25-meter zero target (NSN 6920-01-253-4005) shown in Figure 3. When zeroing the night vision sight, you can use either of these targets with either the M16A1 or M16A2 rifle. Use the marginal information on the target to adjust the sights on the rifle—not the night vision sight.



**Figure 1. Zero aiming point.**

6. Locate the center of the shot group. From the center of the group, adjust the reticle to move the center of the shot group to a point 7 centimeters (10 1/2 squares on the M16A1 target; 7.8 squares on the M16A2 target) directly below the target aiming point (Figure 2 and Figure 3). Mark the reticle adjustment actuators to show the direction of round impact movement.

a. Each click of the azimuth or elevation adjustment actuator moves the strike of the round 0.63 centimeter (1/4 mil or about 1/4 inch) at a 25-meter range.

b. On the M16A1 zero target, 1 1/2 squares equals 1 centimeter and 10 1/2 squares equals 7 centimeters (Figure 2). On the M16A2 zero target, each square is .9 centimeter and 7.8 squares equals 7 centimeters (Figure 3).

7. Perform the following actions after you adjust the controls:

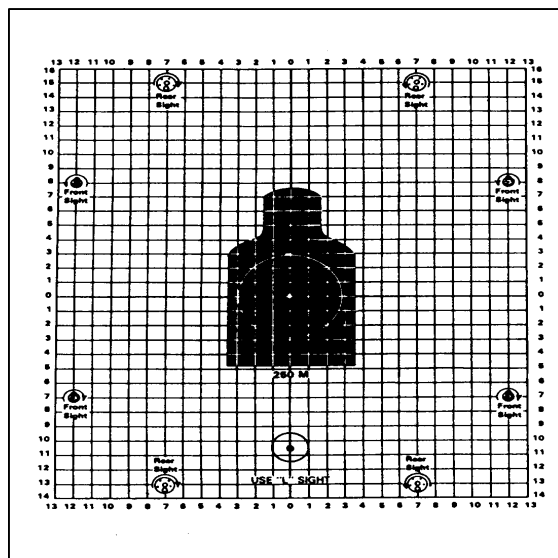
a. Move the weapon so that the reticle aiming point is again on the target aiming point.

b. Repeat Task Step 5 and Task Step 6 until the center of the shot group is 7 centimeters below the target aiming point as shown in Figure 4 and Figure 5.

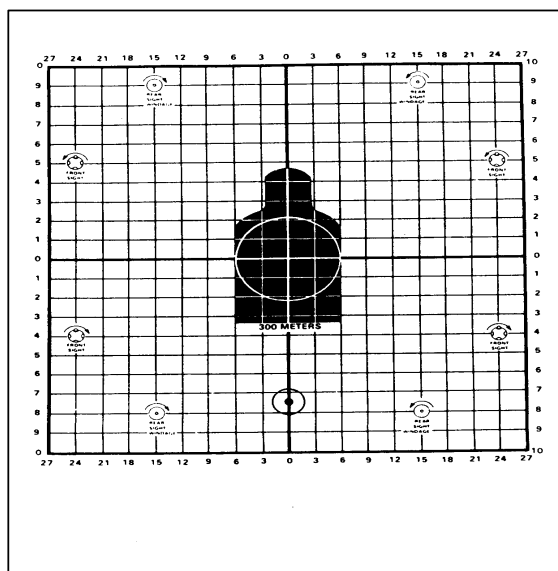
8. During zeroing, make sure the soldier places the reticle aiming point (Figure 1) on the target aiming point in the silhouette's center of mass. Figure 6 shows what a zeroed shot group should look like.

**EXAMPLE:** From the center of the shot group in Figure 4, move the azimuth adjustment actuator 11 clicks to the left.

- Move the elevation adjustment actuator down 17 clicks.
- From the center of the shot group in Figure 5, move the azimuth adjustment actuator 9 clicks to the left. Move the elevation adjustment actuator 16 clicks.



**Figure 2. M16A1 zeroing target.**



**Figure 3. M16A2 zeroing target.**

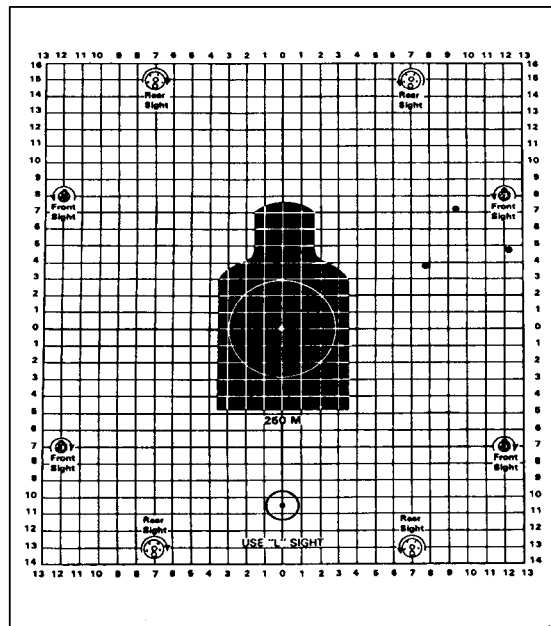


Figure 4. Sample 25-meter zeroing target for M16A1.

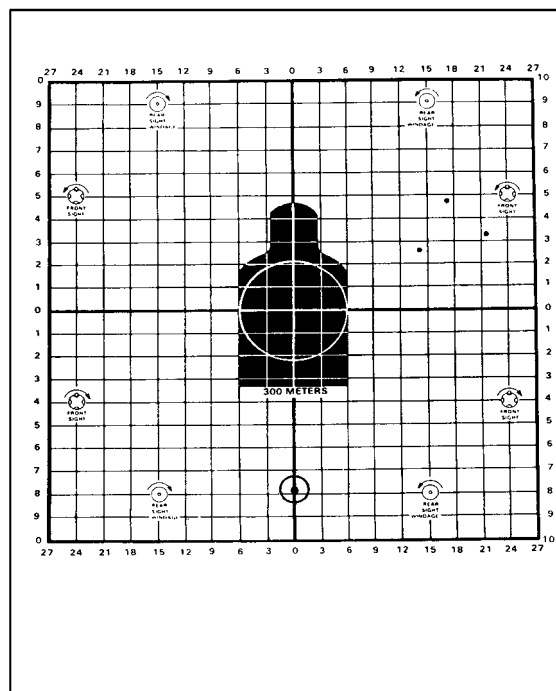
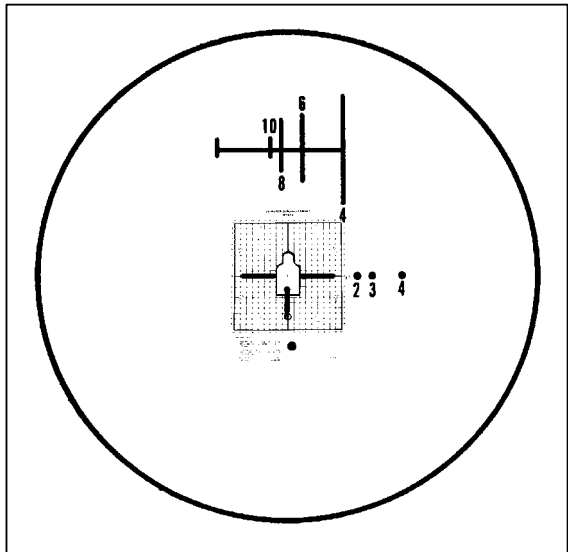


Figure 5. Sample 25-meter zeroing target for M16A2.



**Figure 6. Sight picture and zeroed shot group.**

### EVALUATION PREPARATION

*Setup:* At the test site, provide all equipment and materials given in the task conditions statement. Also provide a bipod for the rifle.

*Brief Soldier:* Tell the soldier to zero the AN/PVS-4 to the rifle within 18 rounds or less.

### EVALUATION GUIDE

Performance Measures	Results	
1. Place the AN/PVS-4 sight into operation.	P	F
2.. Zero the AN/PVS-4 sight to the rifle using 18 rounds or less.	P	F
3. Remove the AN/PVS-4 sight from operation.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

TM 11-5855-213-10

## ENGAGE TARGETS WITH AN M16A1 OR M16A2 RIFLE USING A NIGHT VISION SIGHT AN/PVS-4 071-315-2308

### CONDITIONS

During darkness, given an M16A1 or M16A2 rifle with a mounted and zeroed AN/PVS-4; one silhouette target between 50 and 100 meters, one at 150 meters, and one between 200 and 250 meters; and one magazine with 18 rounds of ammunition.

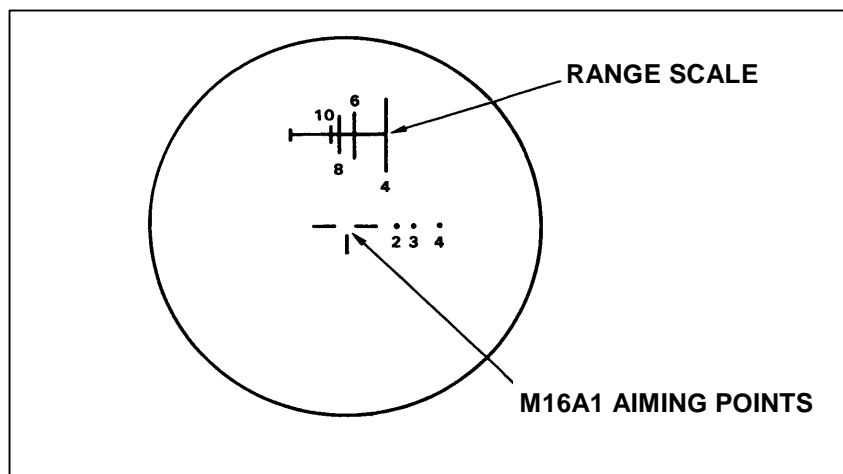
### STANDARDS

Fire all 18 rounds and hit the targets at least nine times. At least five rounds must hit the 150-meter target; at least two rounds must hit the 50- to 100-meter target, and at least two rounds must hit the 200- to 250-meter target.

### TRAINING AND EVALUATION

#### Training Information Outline

**NOTE:** Ensure the AN/PVS-4 has the proper sighting reticle ([Figure 1](#)).

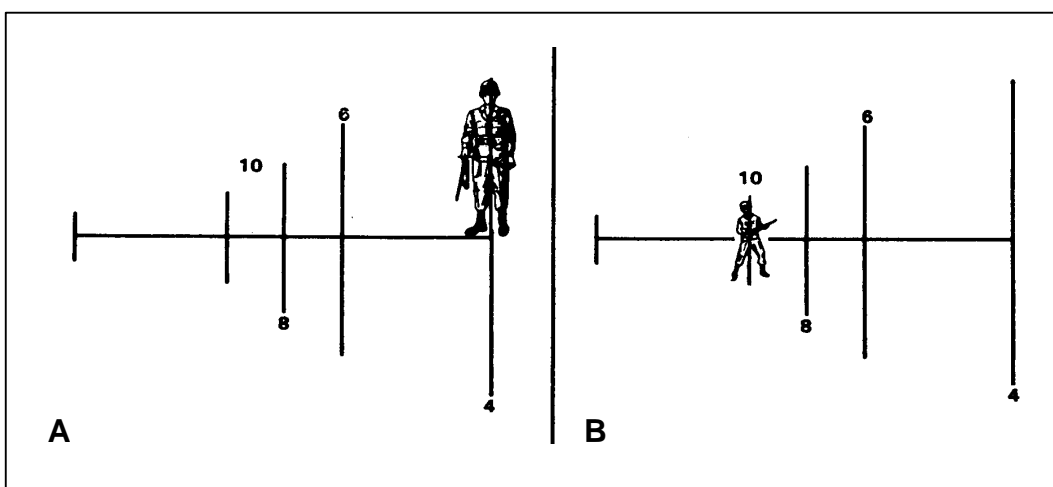


**Figure 1. Sight reticle.**

1. Place the sight into operation (see Task 071-315-0003, Operate a Night Vision Sight AN/PVS-4).
2. Use the sight reticle. When used with the rifle, the AN/PVS-4 sight reticle consists of two parts ([Figure 1](#)).
  - a. Use the upper part of the reticle (range scale) to determine range to the target.
  - b. Use the lower part of the reticle to aim the weapon.

**NOTE:** Ensure the AN/PVS-4 is mounted to the rifle using the rifle mounting adapter and not the M203 mounting bracket.

3. Determine range to target.
  - a. The vertical lines on the range scale tell how far away a 6-foot man is.
    - (1) Place the target on the horizontal line and match it with one of the vertical lines (A, Figure 2).
    - (2) Read the number at the bottom or top of the vertical line. That is the distance in hundreds of meters to the target.
    - (3) If the figure is the same height as the vertical line above and below the horizontal line, the distance is half of the number at the top or bottom of that line (B, Figure 2).
    - (4) The man shown in A, Figure 2 is 400 meters away; the man in B, Figure 2 is 500 meters away.



**Figure 2. Range determination using vertical lines.**

b. The horizontal line of the range scale indicates the range (in hundreds of meters) of a 20-foot target such as a tank or large truck viewed from the side.

- (1) Place the left edge of the vehicle at the left side of the horizontal line (Figure 3).
- (2) Read the range to the tank from the scale at the right edge of the tank. As shown in A, Figure 3, the range to the vehicle is 1,000 meters.
- (3) When viewed from the front or rear, the vehicle width equals about half its length. Read the placement of the vehicle width on the range scale as half the range scale value. As shown in B, Figure 3, the range to the vehicle is 400 meters.

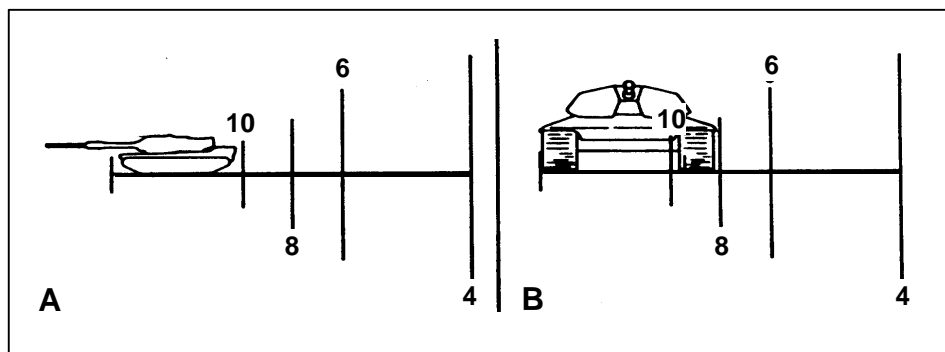
4. Engage targets using the sight reticle.
  - a. The rifle aiming point for ranges out to 250 meters is the center of the three straight lines (zero aiming point) (Figure 4). The top of the vertical line is the aiming point for 400 meters, and the bottom of the line is the aiming point for 600 meters.
  - b. Locate the target, estimate the range, and place the proper aiming point on the target.



**WARNING**

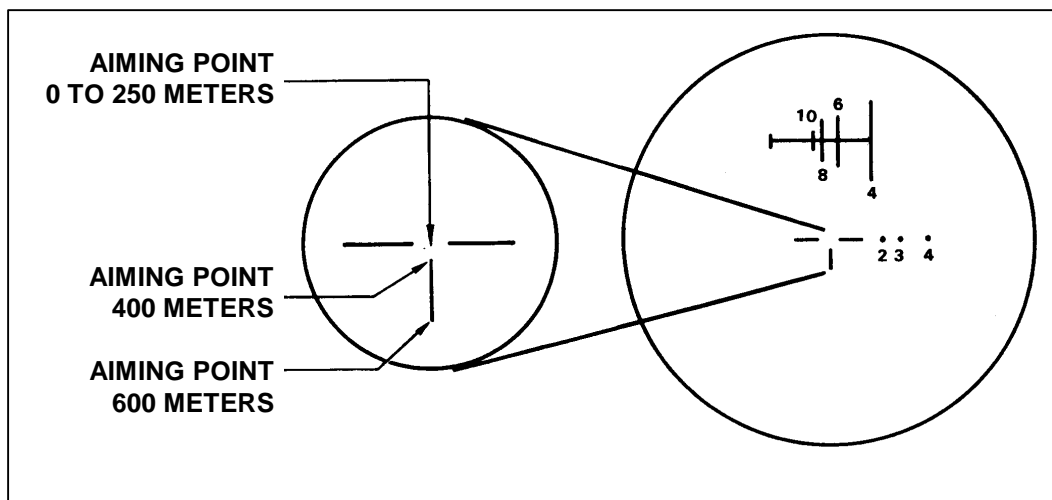
To prevent eye injury from weapon recoil, attach the eye guard to the sight before firing the weapon.

- c. Fire the weapon using correct marksmanship procedures.



**Figure 3. Range determination using horizontal line.**

**NOTE:** When firing the rifle, disregard the three dots to the right of the aiming point; you would only need these if you were firing the M203.



**Figure 4. Zero aiming point.**

### EVALUATION PREPARATION

*Setup:* At a live-fire range, provide the equipment and materials given in the task conditions statement. Turn off the sight after evaluation.

*Brief Soldier:* Tell the soldier to engage all targets with a minimum of 9 hits out of 18 rounds.

### **EVALUATION GUIDE**

#### **Performance Measures**

#### **Results**

- |   |   |   |
|---|---|---|
| 1. Place the AN/PVS-4 into operation.                   | P | F |
| 2. Engage targets.                                      | P | F |
| a. The 150-meter target with at least five hits.        |   |   |
| b. The 50- to 100-meter target with at least two hits.  |   |   |
| c. The 200- to 250-meter target with at least two hits. |   |   |

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

#### **Required**

None

#### **Related**

TM 11-5855-213-10

## **M249 MACHINE GUN**

### **MAINTAIN AN M249 MACHINE GUN 071-312-4025**

#### **CONDITIONS**

Given an M249 machine gun; linked 5.56-mm ammunition; cleaning kit with pipe cleaners, small arms swabs, chamber and bore brushes, cleaning rod, wiping rags, scraper tool, and cleaner lubricant preservative (CLP). You have a requirement to maintain the weapon.

#### **STANDARDS**

Clean and lubricate the M249 machine gun. Inspect parts. Turn in unserviceable parts. Assemble the gun and ensure it is operational. Clean and inspect linked 5.56-mm ammunition for serviceability. Turn in unserviceable ammunition.

#### **TRAINING AND EVALUATION Training Information Outline**

**NOTE:** The M249 is available with old and new style barrels. Diagrams used here show the new-style barrel.

1. Clear the M249 machine gun.
  - a. Move the safety to the fire position.
  - b. With your right hand, palm up, pull the cocking handle to the rear and lock the bolt to the rear.
  - c. Hold the cocking handle to the rear and move the safety to the safe position. Push the cocking handle forward to the locked position. Place weapon on safe.
  - d. Push the cocking handle forward to its lock position (you should hear a click).
  - e. Raise the cover and feed mechanism assembly. To check for brass, links, or ammunition—
    - (1) Check the feed pawl assembly under the feed cover.
    - (2) Check the feed tray assembly.
    - (3) Lift the feed tray assembly and inspect the chamber.
    - (4) Check the space between the bolt assembly and chamber.
    - (5) Insert two fingers in the magazine well and feel for brass or ammunition.
  - f. Close the cover and feed mechanism assembly. Move the safety to the fire position.
  - g. Pull the cocking handle to the rear, press the trigger, and ease the bolt forward.
2. Disassemble the M249 machine gun.

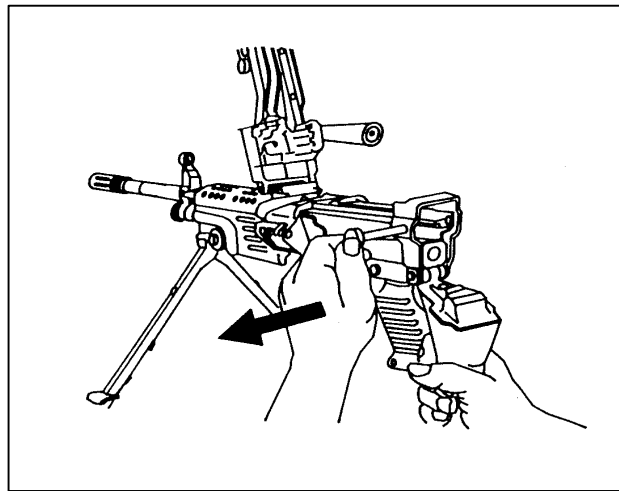
**WARNING**

**Ensure bolt is in forward position before removing drive spring, return rod, and transfer mechanism assembly.**

a. Remove the drive spring, return rod, and transfer mechanism assembly.

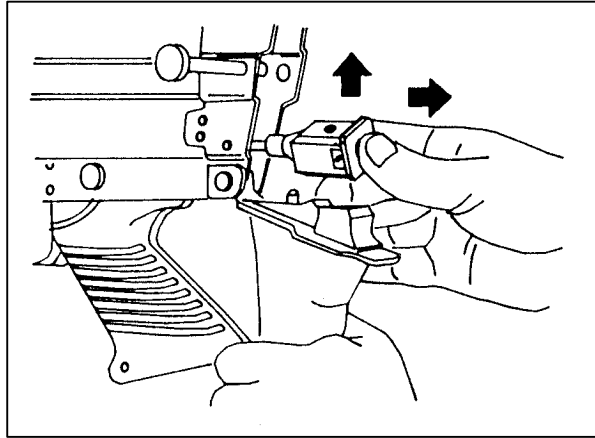
(1) Raise the cover assembly. Pull the upper retaining pin at the rear of the receiver to the left. Let the butt pivot downward so that the rear opening of the receiver is clear (Figure 1).

**NOTE:** The upper and lower retaining pins in the rear of the receiver are captured pins. Do not try to remove them completely during disassembly.



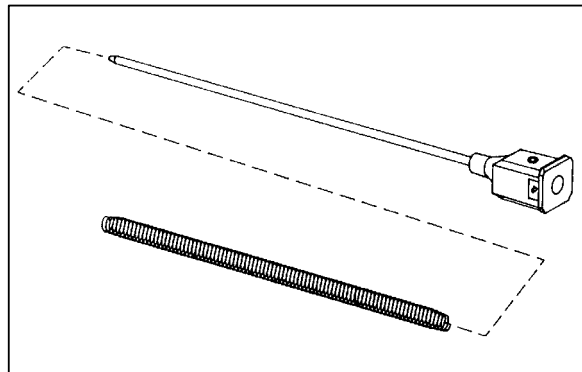
**Figure 1. Rear opening of the receiver.**

(2) Hold the weapon with one hand on the buttstock. At the same time, push in and upward on the rear end of return rod and transfer mechanism assembly with thumb of other hand to release it from positioning groove. Withdraw return rod and transfer mechanism assembly and spring (Figure 2).



**Figure 2. Removal of the return rod and transfer mechanism assembly.**

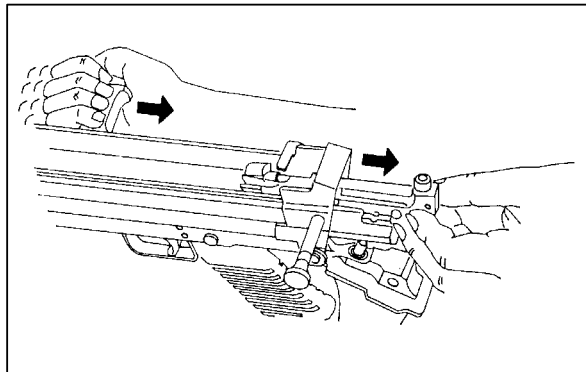
(3) Separate the spring from the return rod and transfer mechanism assembly (Figure 3).



**Figure 3. Removal of the spring.**

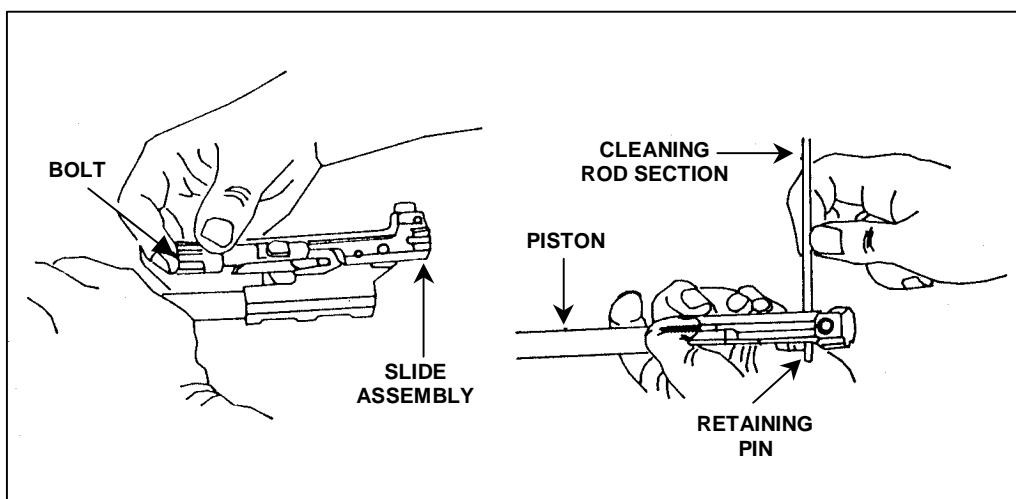
b. Remove the operating rod, slide assembly, and bolt assembly.

(1) Pull the cocking handle to the rear to move operating rod, slide assembly, and bolt assembly out the rear of the receiver (Figure 4).



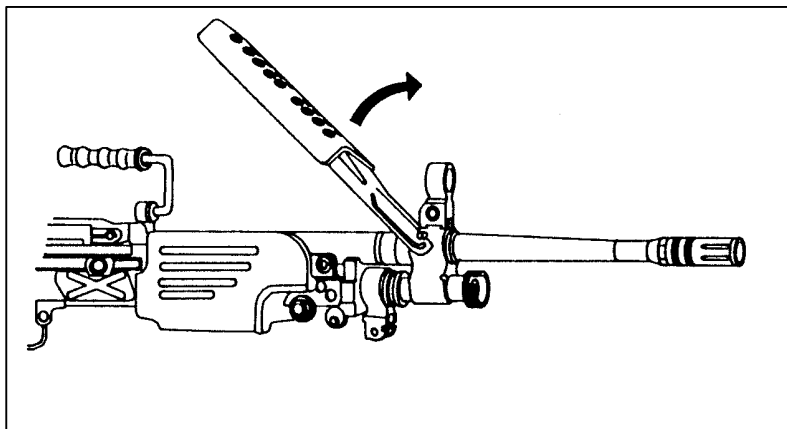
**Figure 4. Removal of the operating rod, slide assembly, and bolt assembly.**

(2) Rotate the bolt clockwise to disengage the lug. Remove the bolt from the slide assembly. Separate the piston from the slide assembly by pressing the rearmost retaining pin to the left and lifting the piston off the slide assembly (Figure 5).



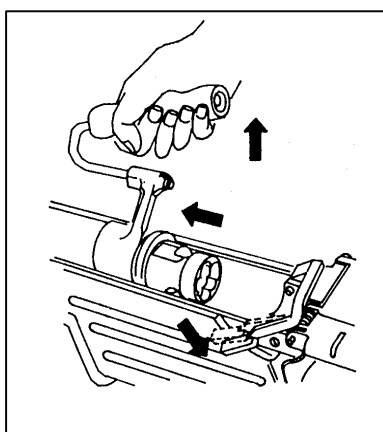
**Figure 5. Removal of the bolt and piston.**

c. Remove the heat shield. Hold the weapon with one hand. With the other hand, grasp the heat shield just forward of the barrel handle, and lift it off the barrel (Figure 6).



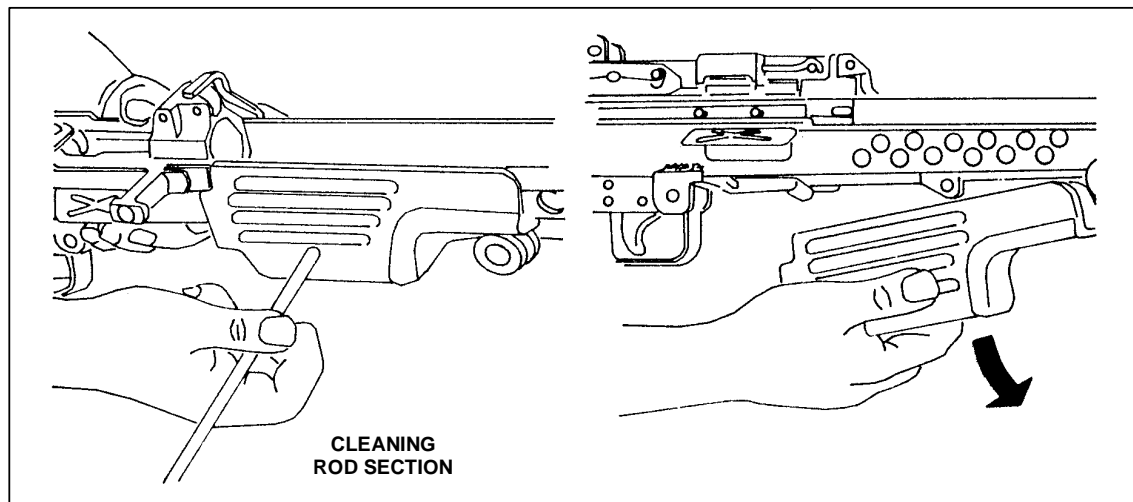
**Figure 6. Removal of the heat shield.**

- d. Remove the barrel (Figure 7).
- (1) Ensure the folding handle on the new style barrel is in carrying (up) position.
  - (2) Depress the barrel locking lever with your left hand. Grasp and lift the carrying handle with your right hand. Push the barrel forward.



**Figure 7. Removal of the barrel.**

- e. Remove the handguard (Figure 8).
- (1) Push the handguard retaining pin to the left using a section of the cleaning rod.
  - (2) Pull downward and remove the handguard.

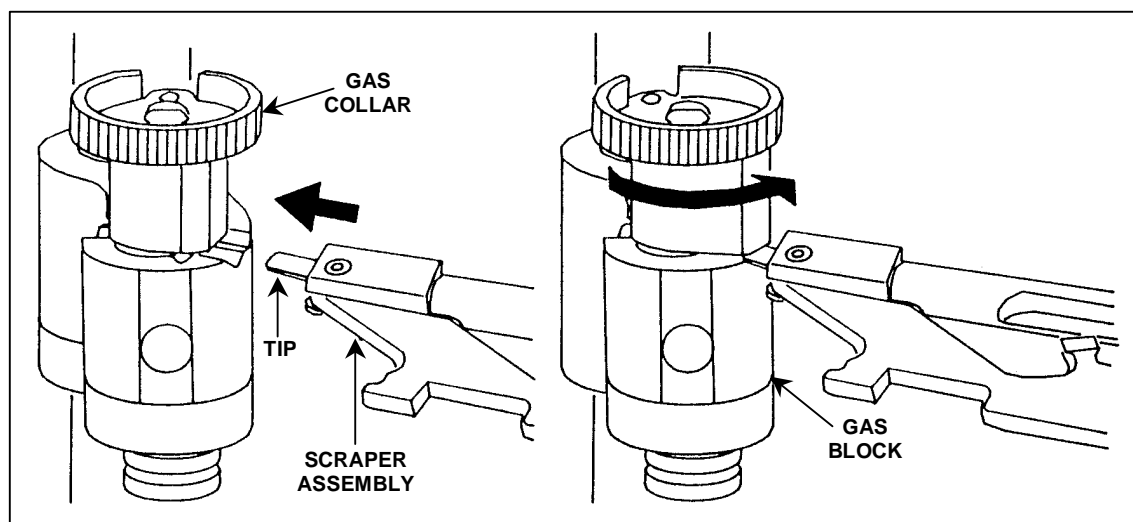


**Figure 8. Removal of the handguard.**

f. Remove the gas regulator.

(1) Position the gas collar so you can insert the scraper assembly into the notch in the front left of the gas block.

(2) Insert the tip of the scraper assembly in the notch; hold the scraper firmly in position ([Figure 9](#)).

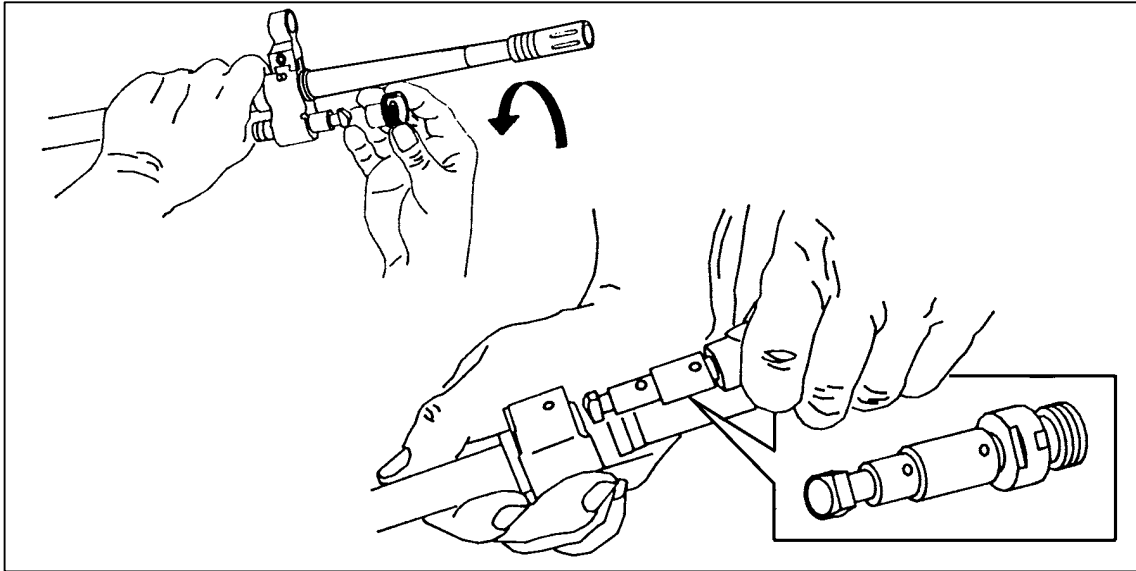


**Figure 9. Insertion of the scraper assembly.**

(3) Turn the collar counterclockwise and remove it ([Figure 10](#)).

(4) Remove the gas regulator from the gas block ([Figure 10](#)).



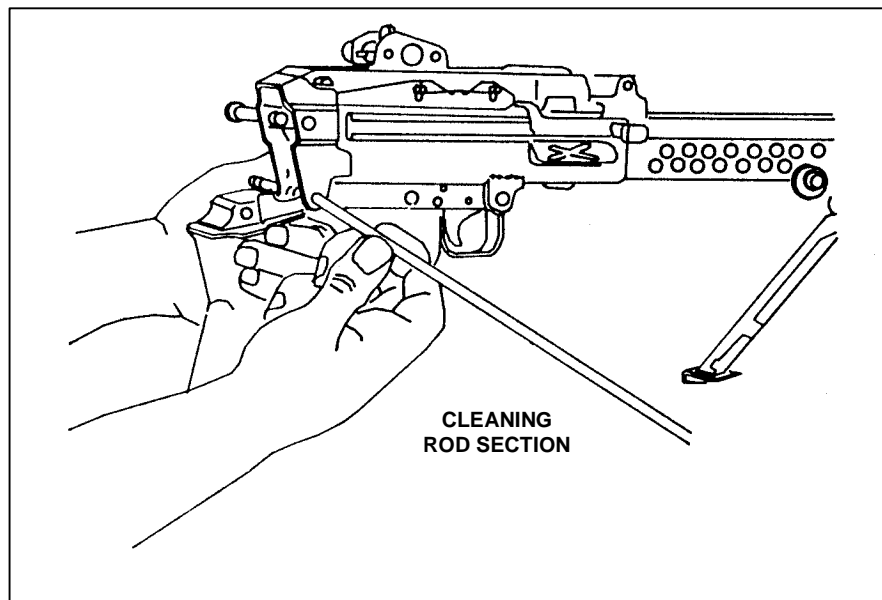


**Figure 10. Removal of the gas regulator from the gas block.**

g. Remove the buttstock and buffer assembly.

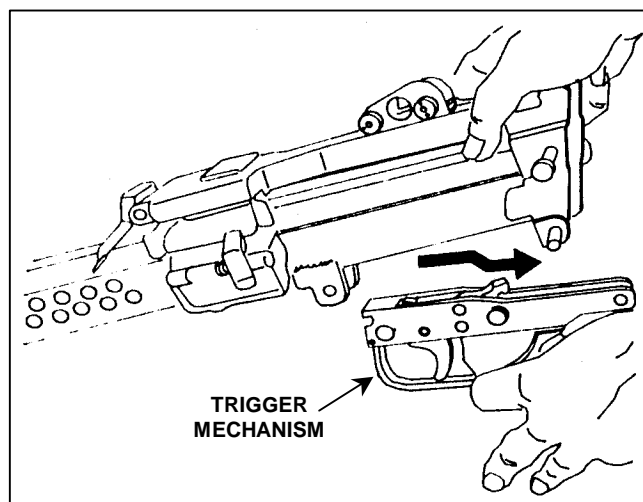
**NOTE:** The upper and lower retaining pins in the rear of the receiver are captured pins. Do not try to remove them completely during disassembly.

- (1) Using a section of the cleaning rod, push the lowermost retaining pin to the left.
- (2) While supporting the trigger mechanism with one hand, use the other to pull the buttstock and buffer assembly rearward and remove it ([Figure 11](#)).



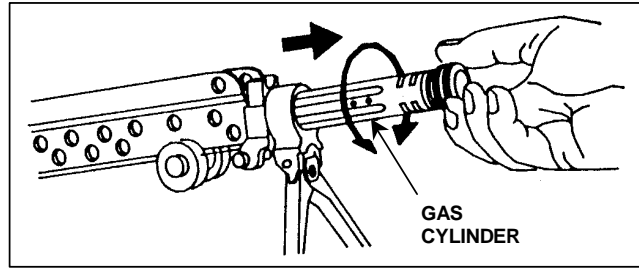
**Figure 11. Removal of the buttstock and buffer assembly.**

- h. Remove the trigger mechanism by pulling rearward and down ([Figure 12](#)).



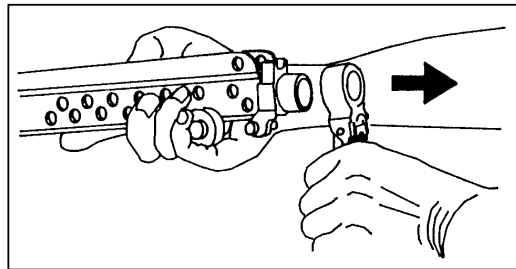
**Figure 12. Removal of the trigger mechanism.**

- i. Remove the gas cylinder.
  - (1) Turn the gas cylinder to the left or right to release the locking spring.
  - (2) Pull the gas cylinder forward to remove it ([Figure 13](#)).



**Figure 13. Removal of the gas cylinder.**

j. Remove the bipod. The bipod should slip off the receiver easily. If it does not, turn the bipod left or right to loosen any dirt or corrosion ([Figure 14](#)).



**Figure 14. Removal of the bipod.**

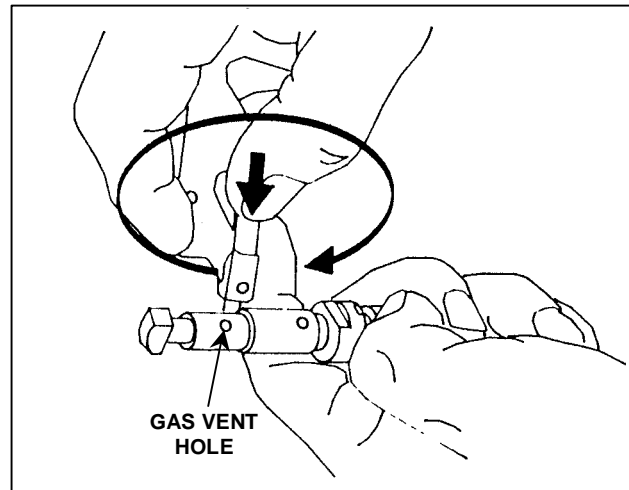
3. Clean the M249.

**WARNING**

**Do not use gasoline, kerosene, hydraulic oil, benzene, bensol, high-pressure water, steam, or compressed air for cleaning.**

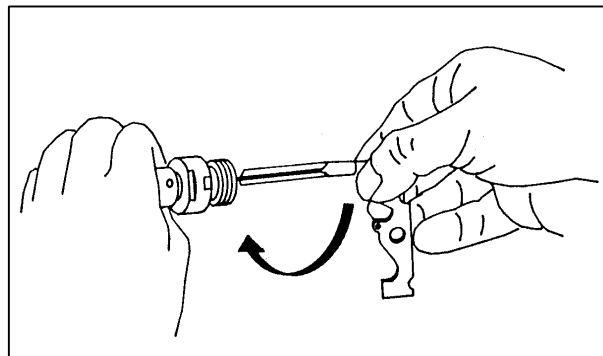
**NOTE:** Do not use abrasives to clean the bore, piston, gas cylinder, or gas regulator.

- a. Clean the bore and chamber using a bore brush, a chamber brush, CLP, and fresh swabs.
- b. Clean the gas regulator using the scraper. Do not use CLP on the collar, gas block, or body.
  - (1) Clean the gas vent hole ([Figure 15](#)).



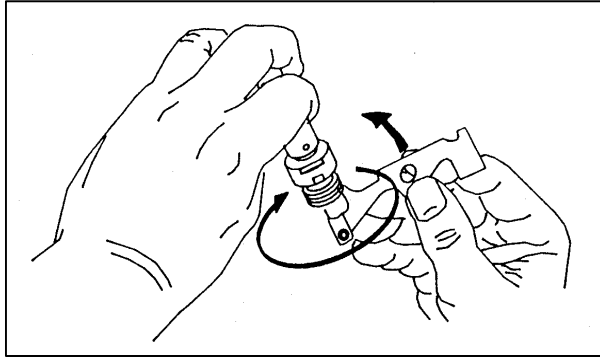
**Figure 15. Cleaning the gas vent hole.**

(2) Clean the central hole of the gas regulator with the appropriate part of the scraper by turning the scraper clockwise and pushing it inward toward the bottom of the housing ([Figure 16](#)).



**Figure 16. Cleaning the central hole.**

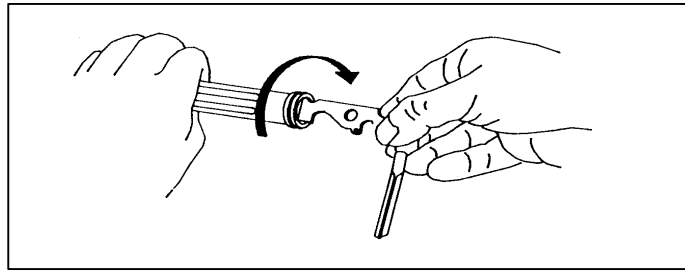
(3) Clean the two grooves of the regulator body using the protruding tips of the scraper ([Figure 17](#)).



**Figure 17. Cleaning the grooves of the regulator body.**

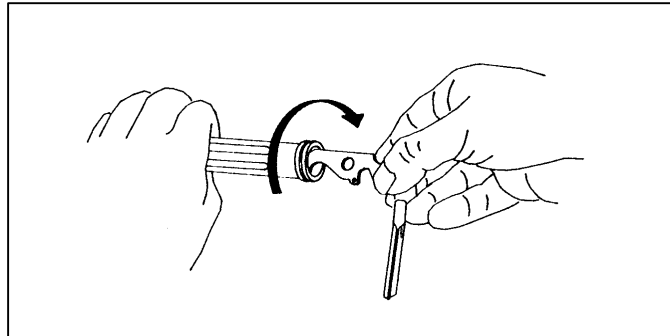
c. Clean the gas cylinder and piston using the scraper. Do not use CLP on the gas cylinder or on the piston.

(1) Clean the front interior of the gas cylinder (repositioned in receiver with bipod in place) by inserting and turning the flat side of the scraper in a full 360-degree circular motion ([Figure 18](#)).



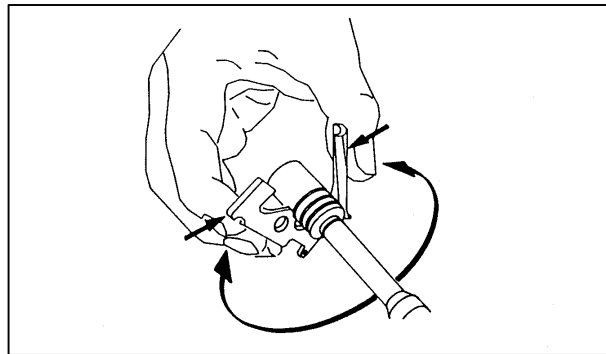
**Figure 18. Cleaning the gas cylinder's front interior.**

(2) Clean the internal grooves on the front side of the gas cylinder as previously described (using the protruding tips of the scraper), but insert the scraper farther into the gas cylinder ([Figure 19](#)).



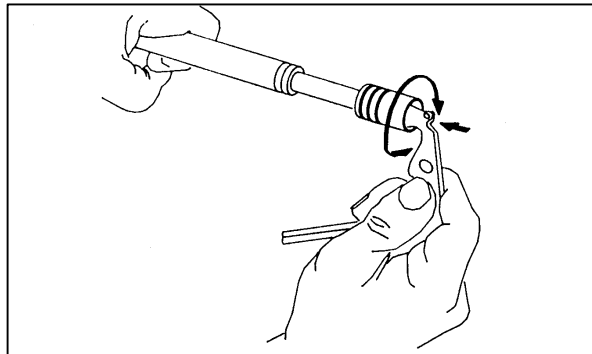
**Figure 19. Cleaning the gas cylinder's internal grooves.**

(3) Clean the three grooves of the piston using a full, 360-degree circular motion (Figure 20).



**Figure 20. Cleaning the grooves of the piston.**

(4) Clean the hole in the front of the piston by inserting and turning the flat side of the scraper in a full 360-degree circular motion (Figure 21).



**Figure 21. Cleaning the hole in the piston.**

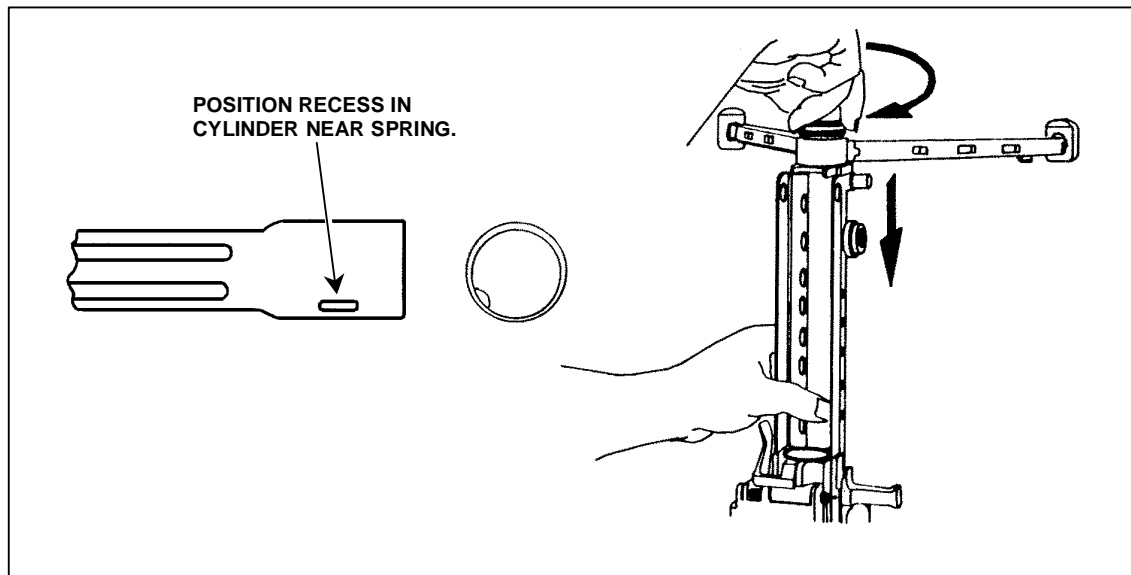
- d. Remove carbon and dirt from all other parts of the weapon using CLP and a wiping rag.
  - e. Clean ammunition boxes with a brush and clean dry wiping rag.
  - f. Clean ammunition with a clean dry wiping rag.
4. Inspect the M249 machine gun.
- a. Inspect the bore and chamber for chips and pitting.
  - b. Check the front sight for looseness.
  - c. Inspect the flash suppressor (old style barrel) or compensator (new style barrel), the barrel extension, and the barrel release for cracks, dents, burrs, or other damage.
  - d. Check the cover assembly for smooth operation, spring tension, bent parts, and excessive wear.
  - e. Check the cocking assembly for free movement and for bent or cracked parts.
  - f. Check the rails for excessive wear, burrs, and chips.
  - g. Check the barrel locking latch and cover detent springs for spring tension.

- h. Check for broken pistol grip and chipped or cracked trigger housing holding lug.
- i. Check the tripping lever and the sear for burrs, cracks, chips, or wear.
- j. Check the cocking action by pushing back on the tripping lever; the sear should rise. Pull the trigger; the sear should lower.
- k. Check the safety function. Push the safety to the right (RED BAND NOT VISIBLE). Pull the trigger; the sear will not lower. Push the safety to the left (RED BAND VISIBLE). Pull the trigger again; the sear will lower.
- l. Check the slide assembly, bolt assembly, piston assembly and return rod and transfer mechanism assembly for burrs, cracks, and broken pins. Push down on roller of slide assembly to ensure it retracts. Check the driving spring for broken strands.
- m. Check bipod legs for correct operation.
- n. Check the rear sight assembly for serviceability.
- o. Check the ammunition box for damage. Make sure the box latch will engage the receiver dovetail.
- p. Inspect ammunition.
  - (1) Check for damaged, corroded, or loose bullets.
  - (2) Check for damaged links.
  - (3) Report to your squad leader or NCOIC any deficiencies you cannot correct.

5. Lubricate the M249.

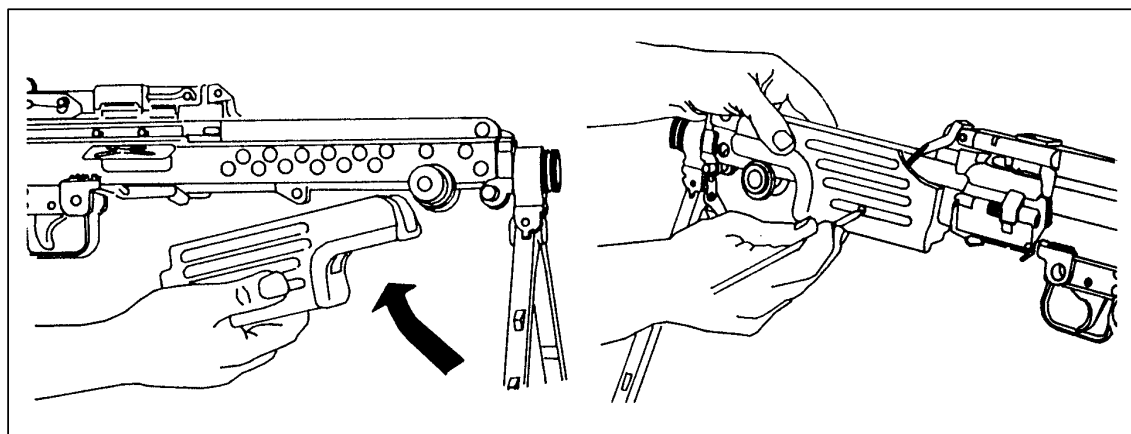
**NOTE:** Use only CLP on the M249.

- a. Lubricate exposed metal parts and all moving parts with a light coat of CLP.
  - b. Do not lubricate the gas regulator hole in the barrel or the gas regulator itself.
6. Assemble the M249.
- a. Replace the bipod and gas cylinder.
    - (1) Place the bipod on the receiver.
    - (2) Push the gas cylinder through the bipod yoke into the receiver.
    - (3) Push the cylinder to the rear while countering the pressure of the locking spring and guiding the end of the cylinder into the receiver with the other hand applying downward pressure. When you have fully inserted the gas cylinder, rotate it until the spring clicks into place in the recess at the rear of cylinder ([Figure 22](#)).



**Figure 22. Replacement of the bipod and gas cylinder.**

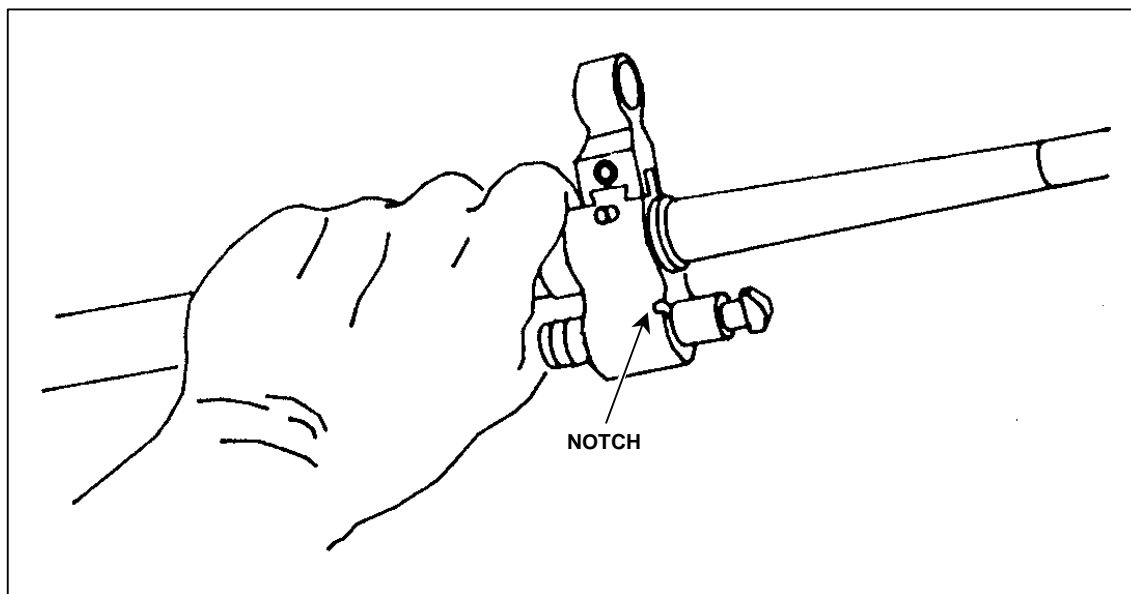
- b. Replace the handguard.
  - (1) Stow cleaning equipment in the handguard.
  - (2) Place the handguard onto the receiver and slide it backward until it stops.
  - (3) Using a cleaning rod section, push the handguard retaining pin to the right. This locks the handguard into position ([Figure 23](#)).



**Figure 23. Replacement of the handguard.**

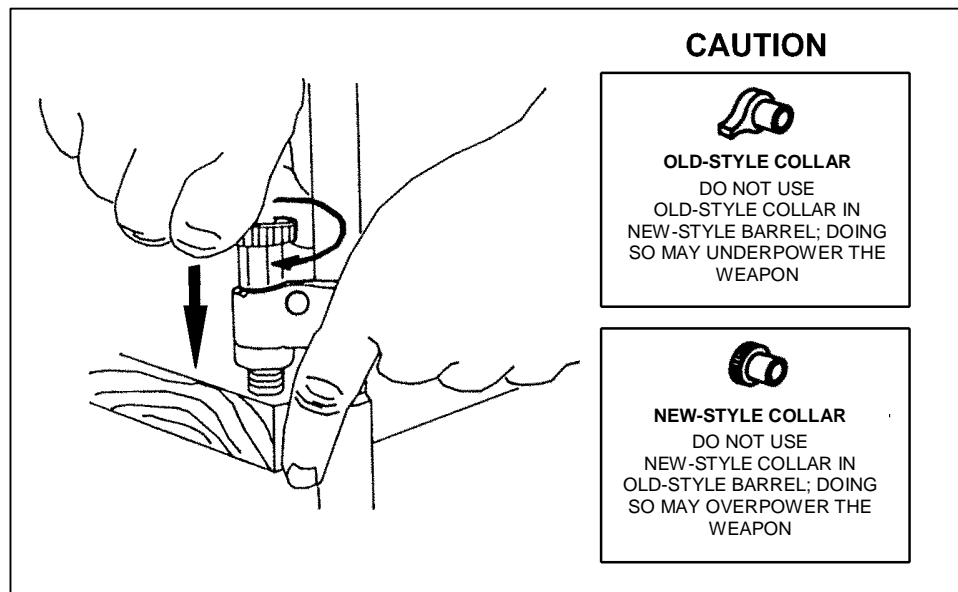
- (4) Pull downward on the handguard to ensure it locks into position.
  - c. Replace the gas regulator.
    - (1) Insert the gas regulator into the lower end of the hole in the gas block. Align the notch on the gas regulator body with the notch in the gas block ([Figure 24](#)).





**Figure 24. Replacement of the gas regulator.**

(2) With gas regulator installed and supported on a firm surface, place the gas collar on the protruding end of the gas regulator. Rotate the gas collar until it slips in place. To lock the gas regulator in place, press it in and rotate it ([Figure 25](#)).



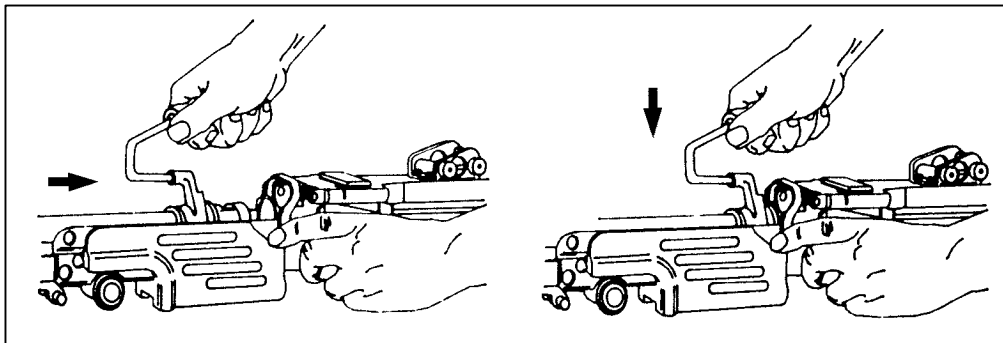
**Figure 25. Replacement of the gas collar.**

**WARNING**

**DO NOT** switch the barrel assembly or the bolt assembly back and forth from one machine gun to another without first checking the headspace. Doing so could injure personnel or damage the gun.

d. Replace the barrel.

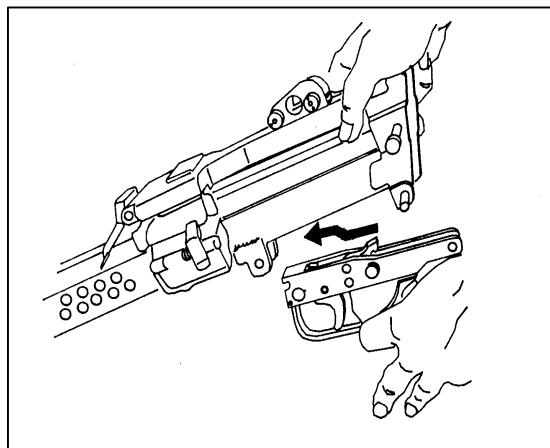
(1) Depress the barrel locking lever with your left hand ([Figure 26](#)).



**Figure 26. Replacement of the barrel.**

(2) Hold the carrying handle with your right hand; pull the barrel rearward into the receiver. Push the carrying handle downward and release the barrel locking lever. Check to ensure the barrel locks into position.

e. Replace the trigger mechanism ([Figure 27](#)).

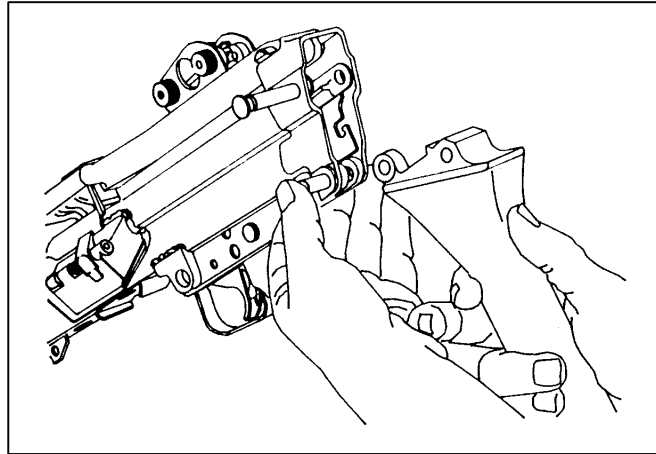


**Figure 27. Replacement of trigger mechanism.**

(1) Pull the retaining pin to the left side of the receiver.

(2) Align the trigger mechanism with the slot on the bottom of the receiver. To hold the trigger mechanism in place, push the lower retaining pin into the right side hole on the rear of the trigger mechanism assembly.

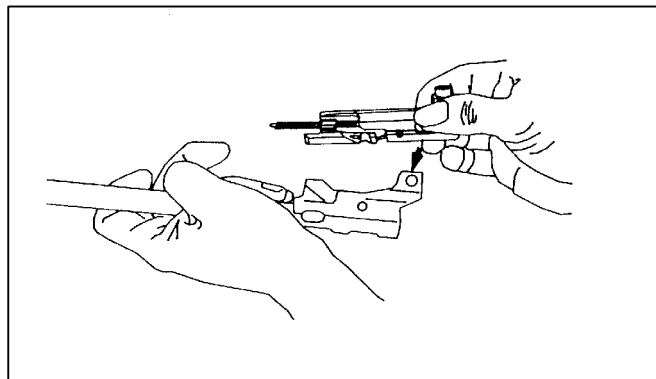
f. Replace the buttstock and shoulder assembly (Figure 28). Support the trigger mechanism with your left hand. Align the lower hole in buttstock and buffer assembly with the rear hole in the trigger mechanism. Push the lower retaining pin to the right.



**Figure 28. Replacement of the buttstock and shoulder assembly.**

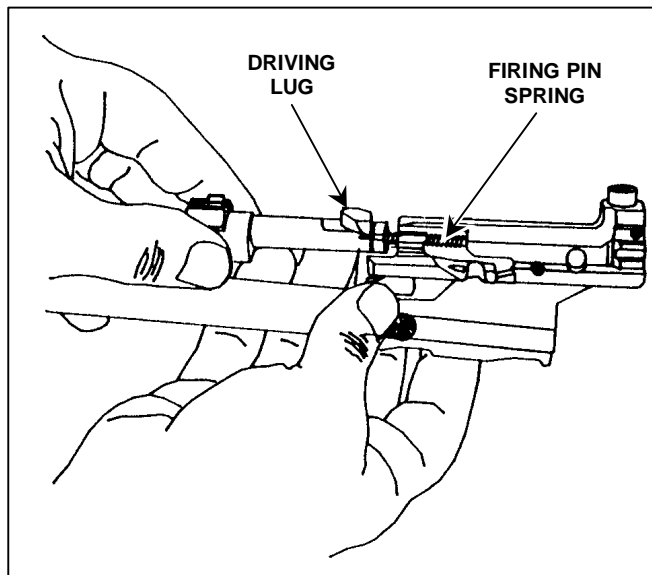
g. Replace the operating rod, slide assembly, and bolt assembly.

(1) Secure the slide assembly to the piston by pushing the retaining pin from the left to the right. Place the firing pin spring on the firing pin (Figure 29).



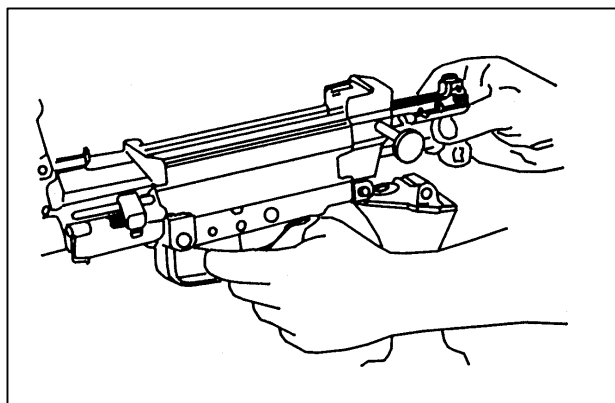
**Figure 29. Attachment of the slide assembly to the piston.**

(2) Put the bolt assembly into the slide assembly. Press in to compress the firing pin spring. Rotate the bolt and hook its driving lug into the slide assembly (Figure 30).



**Figure 30. Attachment of the bolt assembly to the slide assembly.**

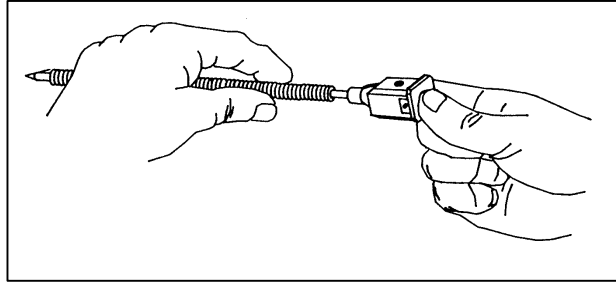
(3) Put the assembled parts into the receiver with the feed cover open. Align and place the bolt lugs; slide the cutouts carefully onto the receiver rails. Press the trigger and at the same time, push the parts all the way forward ([Figure 31](#)).



**Figure 31. Replacement of the operating rod, slide assembly, and bolt assembly.**

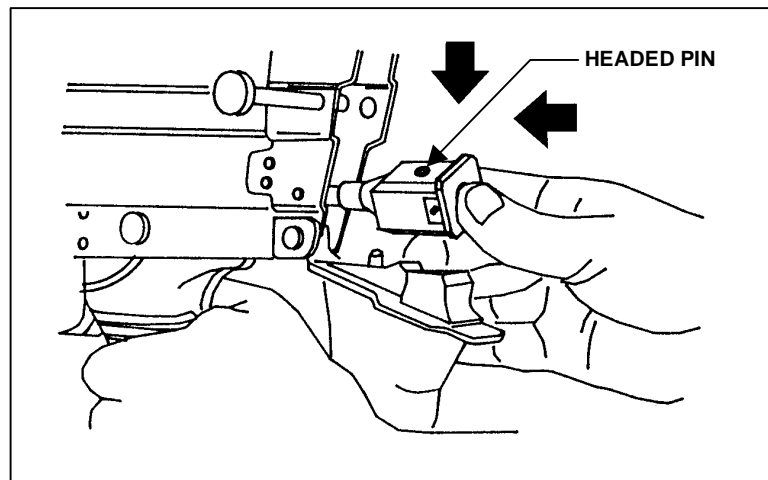
h. Replace the spring, return rod, and transfer mechanism assembly.

(1) Put the slide spring on the return rod and transfer mechanism assembly ([Figure 32](#)).



**Figure 32. Replacement of the spring.**

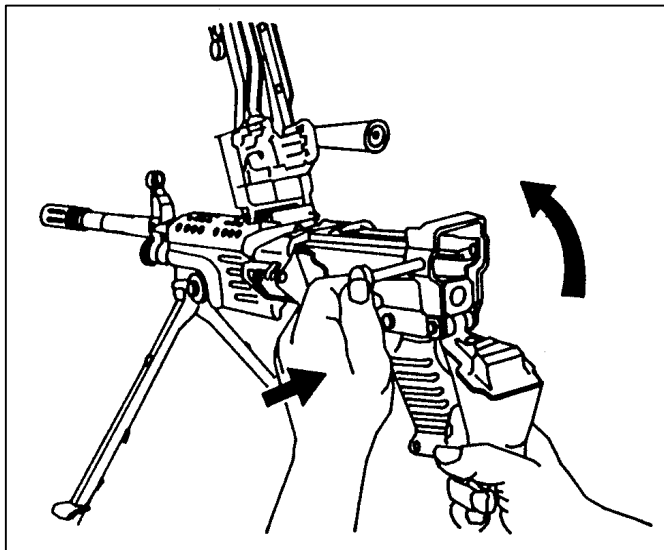
(2) Ensure that the headed end of the vertical pin in the transfer mechanism assembly points upward (on top of the transfer mechanism assembly) (Figure 33).



**Figure 33. Replacement of the return rod and transfer mechanism assembly.**

(3) Hold the pistol grip with one hand. With the other hand, push the return rod and transfer mechanism assembly into its housing in the piston. Press inward and downward on the rear of the assembly until its two lugs move into the receiver grooves.

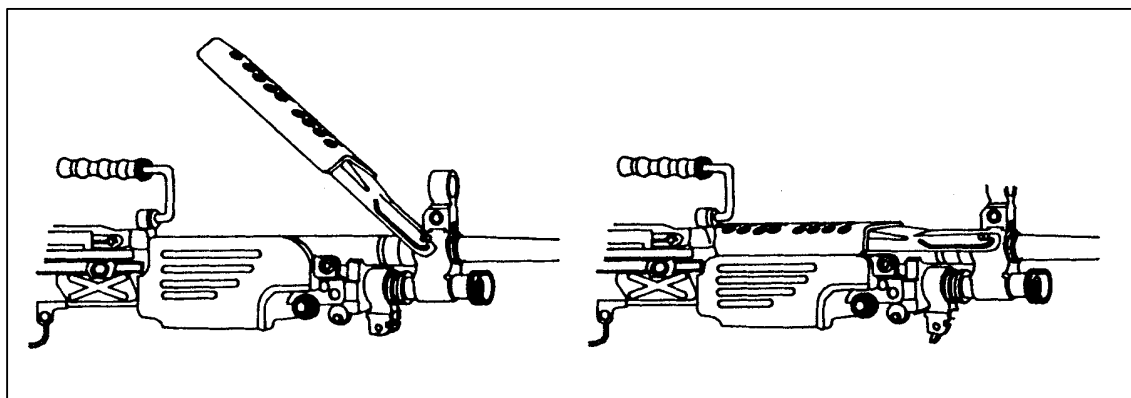
i. Pivot the buttstock and buffer assembly upward into position. Push the retaining pin to the right, and close the cover assembly (Figure 34).



**Figure 34. Closing the rear of the receiver.**

j. Replace the heat shield assembly ([Figure 35](#)).

(1) Hook the metal extensions of the heat shield assembly under the front sight pins (new style barrel) with the spring clips down on top of the barrel.



**Figure 35. Replacement of the heat shield assembly.**

**NOTE:** Although old style barrels do not have protruding front sight pins, you can still install heat shield assemblies on them.

(2) Apply downward pressure and snap the heat shield onto the barrel. Be careful not to pinch yourself.

7. Perform a function check to ensure you have assembled the weapon correctly.

## EVALUATION PREPARATION

*Setup:* At the test site, provide all the equipment and materials listed in task conditions statement. Use only dummy ammunition for training purposes.

*Brief Soldier:* Tell the soldier to perform maintenance on the M249, ammunition box, and linked 5.56-mm ammunition.

## EVALUATION GUIDE

Performance Measures	Results	
1. Clear the weapon.	P	F
2. Disassemble the weapon without damaging any parts.	P	F
3. Clean the weapon, ammunition box, and ammunition.	P	F
4. Identify any damaged, worn, or malfunctioning part.	P	F
5. Identify any damaged ammunition.	P	F
6. Lubricate the weapon using the correct lubrication technique.	P	F
7. Assemble the weapon in correct sequence without damaging any parts.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
FM 23-14	None
TM 9-1005-201-10	

## PERFORM A FUNCTION CHECK ON AN M249 MACHINE GUN 071-312-4026

### CONDITIONS

Given an M249 machine gun and a requirement to perform a function check.

### STANDARDS

Conduct an operational check of the M249 machine gun to make sure it is correctly assembled and functions properly.

### EVALUATION PREPARATION

*Setup:* At the test site, provide the equipment listed in the task conditions statement.

*Brief Soldier:* Tell the soldier to perform a function check to determine if the M249 machine gun functions properly.

### EVALUATION GUIDE

Performance Measures	Results	
1. Grasp cocking handle with the right hand, palm up, and pull the bolt back, locking it to the rear.	P	F
2. Push the cocking handle forward to the lock position.	P	F
3. Place weapon on SAFE.	P	F
4. Pull the trigger. The weapon should not fire.	P	F
5. With the right hand, palm up, pull cocking handle to rear and hold it.	P	F
6. Move the safety to fire position.	P	F
7. While continuing to hold the cocking handle to the rear, use your left hand to pull the trigger and ease the bolt forward to prevent damage to the bolt.	P	F



## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

FM 23-14

TM 9-1005-201-10

## LOAD AN M249 MACHINE GUN 071-312-4027

### CONDITIONS

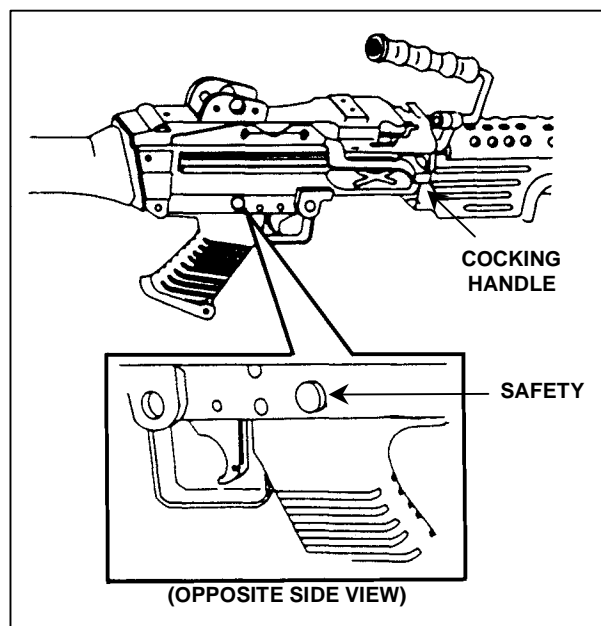
Given an M249 machine gun, small arms ammunition box, and linked 5.56-mm ammunition.

### STANDARDS

Attach the ammunition box to the receiver correctly. Place linked 5.56-mm ammunition in the feed tray groove so that, when the cover is closed, a round remains in the tray groove and the ammunition will feed correctly.

### TRAINING AND EVALUATION Training Information Outline

1. With your palm facing up, pull the cocking handle to the rear. This locks the bolt in the rear position.
2. Push the cocking handle forward until you hear it click into the locked position ([Figure 1](#)).

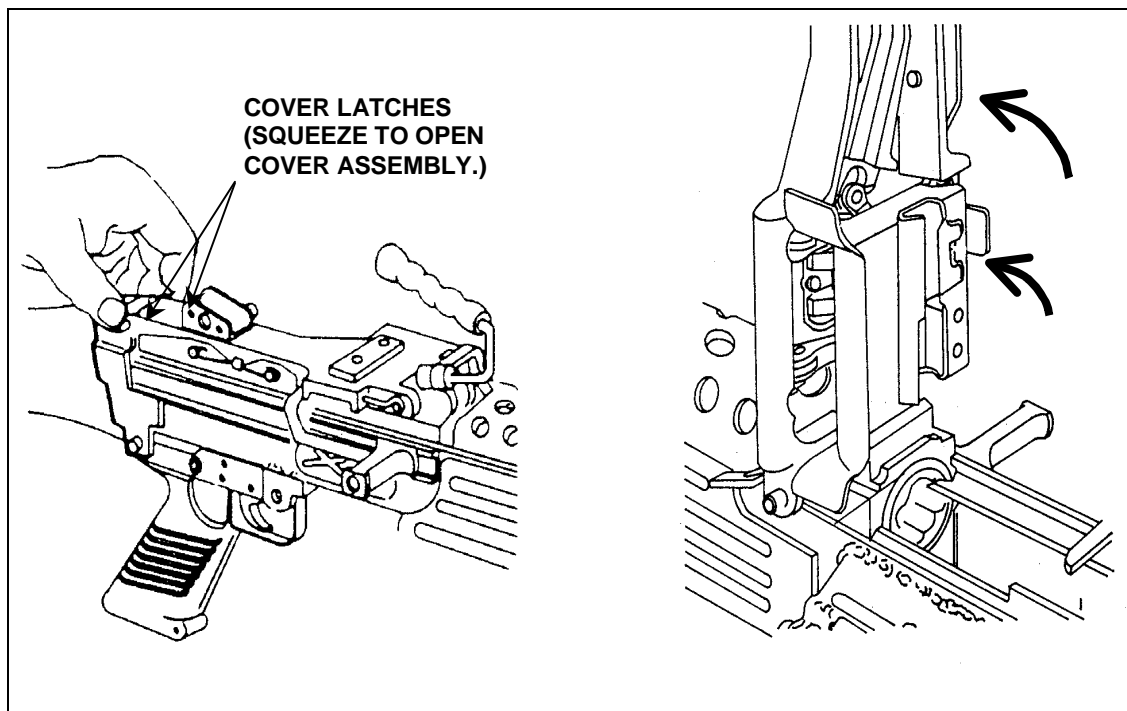


**Figure 1. M249 locking handle and safety.**

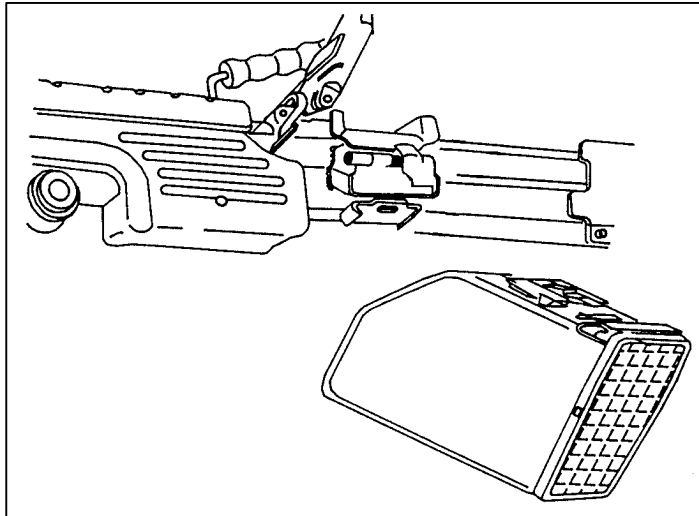
3. Push the safety from left to right for safe mode (the red band will not show) (Figure 1).
4. Open the cover, raise the feed tray assembly, and make sure the feed tray, receiver, and chamber area are clear (Figure 2).
5. Attach ammunition box with linked 5.56-mm ammunition to the underside of the receiver. To do so, align the box latch with the dovetail on the receiver (Figure 3). Pull outward on the ammunition box to make sure the aligning box latch engages.
6. Place the link belt in the feed tray with the first round against the cartridge stop and hold the belt in place. Close the cover assembly (Figure 4).

**NOTE:** The cartridge indicator is no longer required, so you must remove it. If while you are loading the weapon a cartridge indicator sticks up above the top of the left side of the cover, notify your supervisor or unit maintenance.

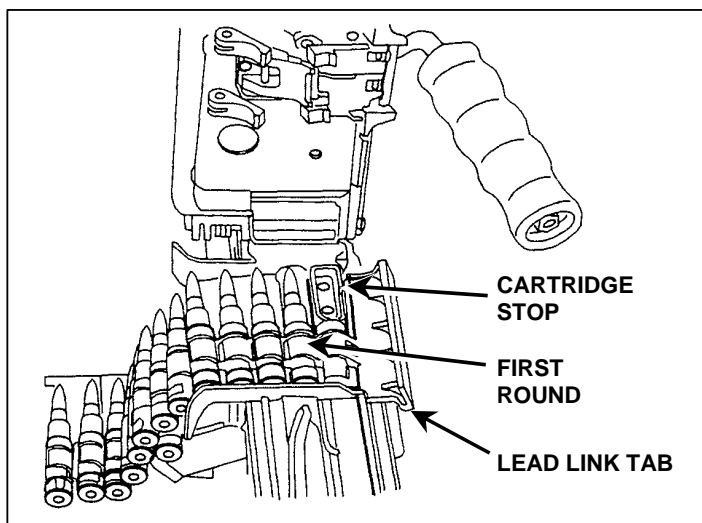
**WARNING**  
The weapon is now loaded.



**Figure 2. Checking the feed tray, receiver, and chamber area.**



**Figure 3. Attachment of the ammunition box.**



**Figure 4. Link belt in feed tray.**

### **EVALUATION PREPARATION**

*Setup:* Use dummy ammunition to test this task. At the test position, provide an M249 and a belt of linked, dummy 5.56-mm ammunition. For standardization, always make sure to place the bolt and cocking handle forward and the safety on safe. Make sure the ammunition is clean and linked properly. Have an assistant relink and wipe the ammunition clean before the next test.

*Brief Soldier:* Tell the soldier to load the M249 machine gun.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Lock the bolt in the rear position.	P	F
2. Push the cocking handle forward to the locked position.	P	F
3. Push the safety to safe position.	P	F
4. Check to make sure the feed tray, receiver, and chamber are clear.	P	F
5. Attach ammunition box with linked ammunition to the receiver.	P	F
6. Place link belt in feed tray with first round against cartridge.	P	F
7. Close the cover.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
FM 23-14	None
TM 9-1005-201-10	

## UNLOAD AN M249 MACHINE GUN

### 071-312-4028

#### CONDITIONS

Given an M249 machine gun, loaded with 5.56-mm ammunition (linked or in an M16 magazine), and a requirement to unload the M249.

#### STANDARDS

Remove all ammunition, expended brass, links, and magazine from the weapon

#### TRAINING AND EVALUATION

##### Training Information Outline

#### EVALUATION PREPARATION

Setup: At the test site, provide the soldier with all the equipment given in the task conditions statement. You may evaluate this task using dummy 5.56-mm linked rounds or dummy 5.56-mm ammunition loaded in 30-round M16 magazines.

*Brief Soldier:* Tell the soldier that he must unload the M249 in the correct.

#### EVALUATION GUIDE

Performance Measures	Results	
1. Pull the cocking handle to the rear, locking the bolt in the rear position.	P	F
2. Place the safety on safe mode (the red band will not show) and return the cocking handle to its forward position.	P	F
3. Remove ammunition and links. a. Belt-fed. Raise the cover and remove any ammunition or links from the feed tray. b. Magazine-fed. Push down on the magazine release tab and pull the magazine out. Then raise the cover.	P	F
4. Raise the feed tray and inspect the chamber to ensure that it contains no ammunition. If it contains ammunition, remove it.	P	F

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
5. Close the cover.	P	F
6. Place the safety in the fire mode (the red band will show).	P	F
7. Pull the cocking handle to the rear, and pull the trigger while manually easing the bolt forward to the closed position.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
FM 23-14	None

## **CORRECT MALFUNCTIONS OF AN M249 MACHINE GUN 071-312-4029**

### **CONDITIONS**

Given a loaded M249 machine gun and 5.56-mm ammunition linked or loaded in an M16 magazine. The M249 machine gun has been firing and one of the following situations has developed: The weapon fails to fire; the weapon continues to fire after the trigger is released (in which case, the weapon is referred to as a “runaway weapon” and the fire is called “uncontrolled fire”); or the weapon fires sluggishly.

### **STANDARDS**

For an M249 that *fails to fire*, take immediate action within 10 seconds to return the weapon to service without identifying the cause. If immediate action does not work, perform remedial action on either a hot or cold M249 and identify the cause of the malfunction. For an M249 that *continues to fire after the trigger is released*--that is, a “runaway” M249 firing “uncontrolled fire”--take immediate action to secure the weapon and identify the cause of the malfunction. For an M249 that *fires sluggishly*, take corrective action.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Take immediate action to correct a failure to fire.
  - a. Grasp the cocking handle (palm up) and pull it to the rear.
  - b. Look at the ejection port to see if a cartridge case, belt link, or round ejects.
    - (1) If nothing ejects--
      - (a) Lock the bolt to the rear.
      - (b) Return the cocking handle forward.
      - (c) Proceed to Step 2 or 3 to take remedial action.
    - (2) If a cartridge, belt link, or round ejects--
      - (a) Return the cocking handle to the forward position.
      - (b) Aim and fire the weapon at the target.
      - (c) If the weapon does not fire, place it in safe mode, and proceed to Step 2 or 3 to take remedial action.
2. Take remedial action on a cold weapon (one that has fired less than 200 rounds in two minutes).
  - a. Ensure the cocking handle is forward and the weapon is in the safe mode.
  - b. Keep the weapon oriented on the target area. Ensure your face is not directly over the feed cover.
  - c. Raise the feed cover.



- d. If the weapon still does not fire, remove the ammunition belt or magazine.
    - (1) If no rounds are in the chamber--
      - (a) Reload and try to fire at the target. If the weapon fires, the stoppage has been corrected.
      - (b) If the weapon fails to fire, take immediate action (Step 1). If the weapon still fails to fire, continue to the next step.
      - (c) Clear the weapon.
      - (d) Disassemble and inspect the weapon.
      - (e) Clean, lubricate, and replace damaged or missing parts as needed.
    - (2) If a cartridge is in the chamber--
      - (a) Remove all ammunition from the feed tray and close the cover.
      - (b) Try to fire. If the weapon fires, the stoppage has been corrected. Reload and continue the mission.
      - (c) If the weapon does not fire, continue to the next step.
      - (d) Lock the bolt to the rear.
      - (e) With the cover closed, remove the round from the chamber using a cleaning rod.
      - (f) Clear the weapon.
      - (g) Disassemble and inspect the weapon.
      - (h) Clean, lubricate, and replace damaged or missing parts as needed.
3. Take remedial action on a hot weapon (one that has fired more than 200 rounds in two minutes).
- a. Ensure the cocking handle is forward and the weapon is in the safe mode.
  - b. Keep the weapon oriented on the target area. Place the safety in the safe mode.

### **WARNING**

**During training, wait fifteen minutes before applying remedial action. During combat, wait five seconds before applying remedial action due to the possibility that a "hangfire" or "cookoff" may occur.**

- c. Raise the cover.
- d. Remove the ammunition belt or magazine.
- e. Raise the feed tray.
- f. Inspect the chamber.
  - (1) If no round is in the chamber—
    - (a) Reload and try to fire.
    - (b) If the gun fires, the stoppage has been corrected.
    - (c) If the weapon fails to fire, apply immediate action for a second time.
    - (d) If immediate action does not work, continue to the next step.
    - (e) Disassemble and inspect the weapon.
    - (f) Clean, lubricate, and replace damaged or missing parts, as needed.
  - (2) If a round is in the chamber—
    - (a) Close the cover and try to fire.

- (b) If the weapon fires, the stoppage has been corrected.
  - (c) If the weapon does not fire, ensure the cocking handle is forward and the weapon is in the safe mode.
  - (d) Disassemble and inspect the weapon.
  - (e) Clean, lubricate, and replace damaged or missing parts, as needed.
4. Take immediate action to secure a runaway weapon.
- a. If after the trigger is released, the weapon continues to fire, take one of the following actions:
    - (1) Hold the weapon on the target until the weapon stops firing.
    - (2) Break the ammunition belt by twisting it in either direction.
    - (3) Allow the weapon to fire the remaining ammunition at the target.
  - b. Clear the weapon.
  - c. Disassemble the weapon and check for the following deficiencies:
    - (1) Broken, worn, or burred sear.
    - (2) Worn sear notch on the piston assembly.
    - (3) Sear stuck in the trigger housing.
    - (4) Carbon buildup in the gas system.
  - d. Clean, lubricate, and replace damaged or missing parts as required.
  - e. Turn weapon in to maintenance before firing again.
5. Correct sluggish operation of the M249 Machine Gun.
- a. Clear the weapon.
  - b. Disassemble and inspect the weapon.
  - c. Clean, lubricate, and replace damaged or missing parts as required.

## EVALUATION PREPARATION

*Setup:* At the test site or live-fire range, provide all the equipment given in the task conditions statement. Set up the weapon so that it is loaded and in the safe mode. Insert an expended round in the belt to cause a stoppage. You can evaluate this task using dummy 5.56-mm ammunition either in links or in M16 magazines.

*Brief Soldier:* Tell the soldier that he must assume a firing position behind the M249 to apply any required immediate action. Ask the soldier to describe the actions to perform for remedial action on a cold and hot weapon, a sluggishly operating weapon, and a runaway weapon.

## EVALUATION GUIDE

### Performance Measures

### Results

1. Take immediate action to correct a failure to fire.

P      F

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
2. Take remedial action on a cold weapon.	P	F
3. Take remedial action on a hot weapon.	P	F
4. Take immediate action to secure a runaway weapon.	P	F
5. Correct sluggish operation of the M249.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

**Required**  
FM 23-14

**Related**  
None

## **LAY AN M249 MACHINE GUN USING FIELD-EXPEDIENT METHODS 071-312-4004**

### **CONDITIONS**

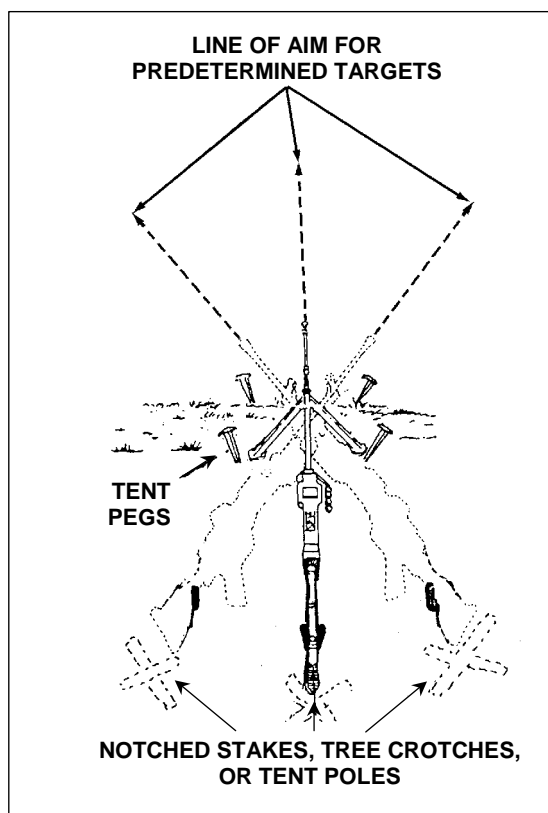
Given an M249 machine gun, linked 5.56-mm ammunition, a defensive fighting position, a designated sector of fire, and notched stakes or tree crotches.

### **STANDARDS**

In the designated sector of fire, lay an M249 machine gun using field-expedient methods to engage preselected targets and to define your sector limits.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Fabricate notched stakes or tree crotches if needed ([Figure 1](#)).



**Figure 1. Notched-stake or tree-crotch method of engaging predetermined targets.**

2. Aim the weapon at the preselected target(s).
3. Mark a spot on the ground under the buttstock assembly.
4. Move the weapon aside. Solidly drive a notched stake or tree crotch into the spot marked on the ground.
5. Place the stock of the weapon in the rests notched into the stakes or into the tree crotches. Make final adjustments to hit the desired target area and to define sector limits.

**NOTE:** If you do not have any notched stakes or tree crotches, you can use tent poles or strong sticks. You will need four poles or sticks for the left and right limits, and more for the target areas. Drive two poles or sticks in the ground in the shape of an “X.” Place the buttstock in the “X.”

6. Drive tent pegs in the ground slightly in front and behind the feet of the bipod legs. This will help you keep the weapon aligned in the sector of fire. Dig shallow trenches or grooves to allow the bipod feet to rotate when you move the stock from one stake or tree crotch to another.

### EVALUATION PREPARATION

*Setup:* Provide equipment and materials listed in the task conditions statement.

**NOTE:** During training, comply with unit SOP and any local regulations regarding the cutting of live vegetation, the digging of holes, and the prevention of erosion.

*Brief Soldier:* Tell the soldier which target(s) to lay the gun on. Point out the sector that the soldier must cover by fire.

### EVALUATION GUIDE

Performance Measures	Results	
1. Aim the weapon at preselected targets.	P	F
2. Place the notched stakes or tree crotches to align weapon on preselected targets.	P	F
3. Drive tent pegs in the ground slightly in front and behind the feet of the bipod legs to help keep the weapon aligned on the sector of fire.	P	F

## EVALUATION GUIDE

### Performance Measures

### Results

4. Dig shallow trenches or grooves to permit the bipod feet to rotate as the soldier moves the stock of the weapon from one stake or tree crotch to another.

P      F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

FM 23-14

### Related

None

## ZERO AN M249 MACHINE GUN 071-312-4030

### CONDITIONS

Given an M249 machine gun on a live-fire range or on terrain where the M249 can be fired safely, a 300-meter target located 300 meters from the firing position, and a 30-round belt of ammunition.

### STANDARDS

Using no more than 30 rounds, adjust the sights on an M249 machine gun so that a correct sight picture causes a fired round to impact the target at the point of aim.

### TRAINING AND EVALUATION Training Information Outline

1. Set sights for initial firing.
  - a. Elevation. Using the elevation knob, index the known range (300 meters) to the target. Center the peep sight by rotating it clockwise (right) as far as it will go, then rotate it counterclockwise (left) 5 clicks (Figures 1 and 2).

**NOTE:** The elevation range scale wheel has range settings from 300 to 1,000 meters. You will find the even numbered range settings on the left side of the scale wheel and the odd numbered range settings on the right (Figure 1 and Figure 2).

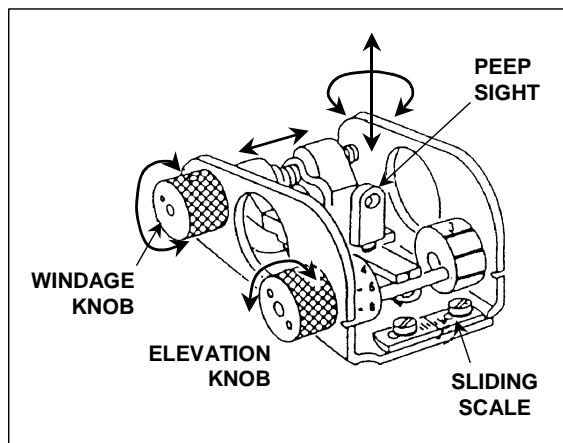
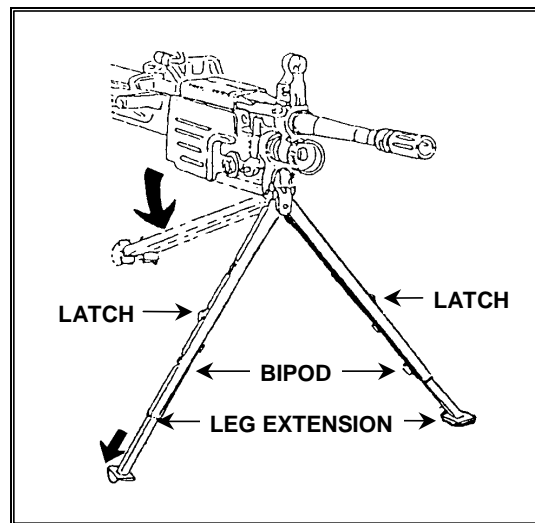


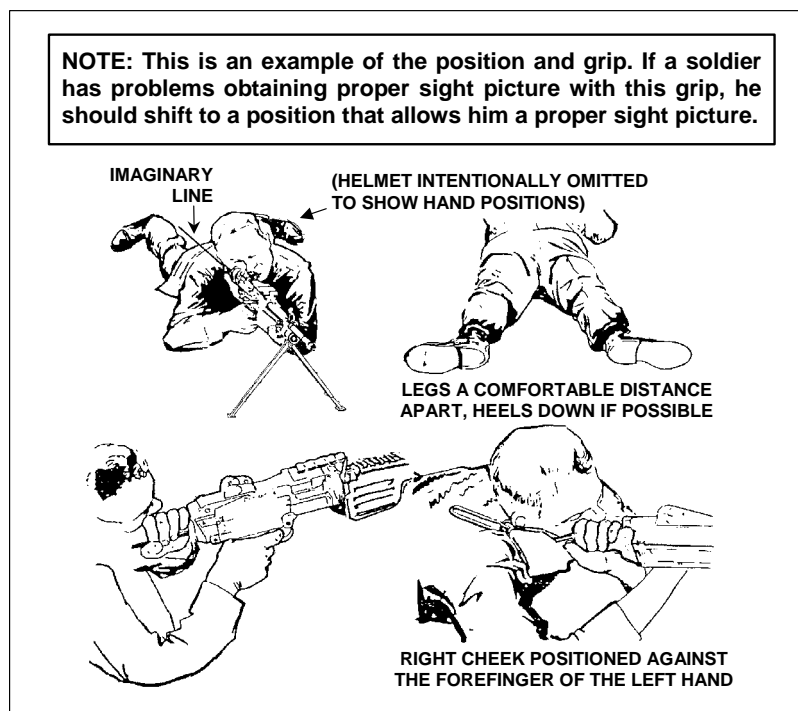
Figure 1. Sliding scale on sight.



**Figure 2. Lowering the bipod.**

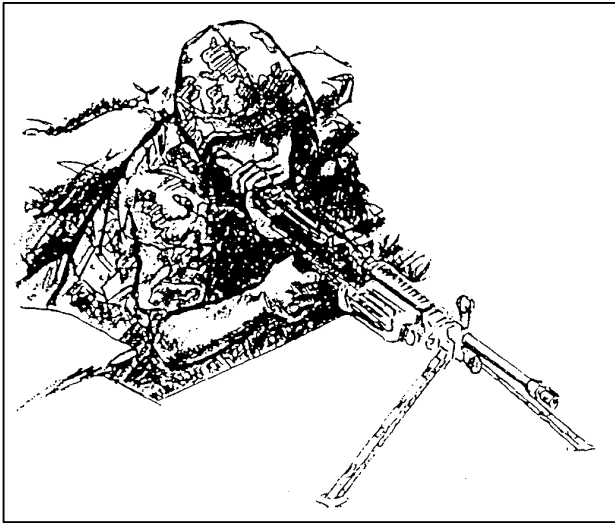
b. Windage. Rotate the windage knob toward the muzzle until the peep sight is completely to the right; then rotate the windage knob toward the buttstock 12 clicks to the left. This will place the peep sight in the approximate center of the sight (Figures 1 and 2).

2. Assume a good stable firing position (Figure 3 and Figure 4).



**Figure 3. Prone position, bipod-supported.**





**Figure 4. Fighting position, bipod-supported.**

3. Fire a three-round burst at the center base of the target. Note where the burst strikes.
4. Adjust sights so that rounds impact target area.
  - a. Adjust the sights for deflection. Determine if the center of the beaten zone is left or right of the target. Adjust the windage knob forward to move it to the right, or adjust it rearward to move it to the left (Figure 5).
  - b. Adjust the sights for elevation. Determine if the center of the beaten zone is above (high) or below (low) the point of aim. Rotate the peep sight clockwise to lower it, or counterclockwise to raise it (Figure 5).

100 meters	—	One click moves strike	5	cm (2 inches)
200 meters	—	One click moves strike	10	cm (4 inches)
300 meters	—	One click moves strike	15	cm (6 inches)
400 meters	—	One click moves strike	20	cm (8 inches)
500 meters	—	One click moves strike	25	cm (10 inches)
600 meters	—	One click moves strike	30	cm (12 inches)
700 meters	—	One click moves strike	35	cm (14 inches)
800 meters	—	One click moves strike	40	cm (16 inches)
900 meters	—	One click moves strike	45	cm (18 inches)

**Figure 5. Windage and elevation (peep sight) correction chart.**

5. Fire a confirming burst. (If you do not hit the target, repeat Steps 3 and 4 until you do so.)

6. Adjust the elevation scale to reflect the range to the target.
7. Record the zero. Once you have zeroed the weapon, record the elevation setting.
  - a. Deflection. Do not record the adjustments for windage scale. Instead, loosen the windage sliding scale screws, and align the scale so that the large index line is under the windage mark on the sight. Tighten the screws.
  - b. Elevation. Count the number of clicks (half turns) you have moved the peep sight away from the initial setting. For example, with a 300-meter zero, if you moved the peep sight two clicks (half turns) up, record ZERO 300 UP 2. If you moved the peep sight two clicks (half turns) down, record ZERO 300 DOWN 2.

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide all equipment and materials in the task conditions statement.

*Brief Soldier:* Indicate the target and the range to the target. Tell the soldier he has 30 rounds to zero the M249.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Set the sights for initial firing.	P	F
2. Assume a good stable firing position.	P	F
3. Fire a three-round burst at the center base of the target, and note where the burst strikes.	P	F
4. Adjust the sights so that rounds impact target area.	P	F
5. Fire a confirming burst.	P	F
6. Adjust the elevation scale to reflect the range to the target.	P	F
7. Record the zero. Once you complete the zero, record the elevation setting.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

FM 23-14

TM 9-1005-201-10

**Related**

None

## ENGAGE TARGETS WITH AN M249 MACHINE GUN 071-010-0006

### CONDITIONS

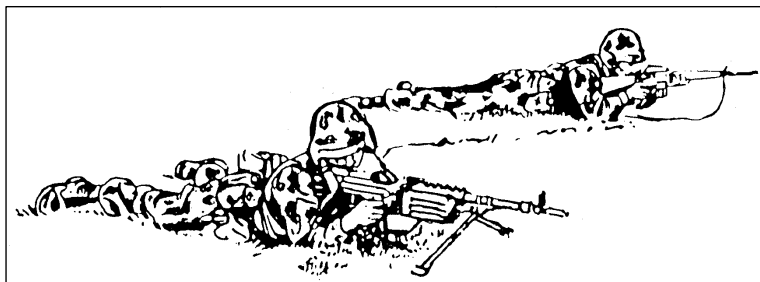
Given an M249 machine gun and linked 5.56-mm ammunition.

### STANDARDS

Apply correct M249 machine gun target engagement techniques so that you hit each target in your assigned sector of fire.

### TRAINING AND EVALUATION Training Information Outline

1. Assume a suitable firing position. Based on your situation, assume the position that will allow you to observe and engage targets, yet minimize your exposure to enemy fire.
  - a. Bipod-supported prone. The bipod-supported prone position ([Figure 1](#)) and the bipod-supported fighting position ([Figure 2](#)) are the best positions for delivering effective fire on targets. Assume these positions when possible.



**Figure 1. Bipod-supported prone position.**



**Figure 2. Bipod-supported fighting position.**

b. Shoulder. The shoulder firing position ([Figure 3](#)) is used to engage targets at ranges less than 100 meters when no other position can be assumed or when the situation dictates its use, for example, in the final stages of the assault.



**Figure 3. Shoulder firing position.**

c. Underarm. The underarm firing position is used when moving in and around the objective during the assault ([Figure 4](#)).



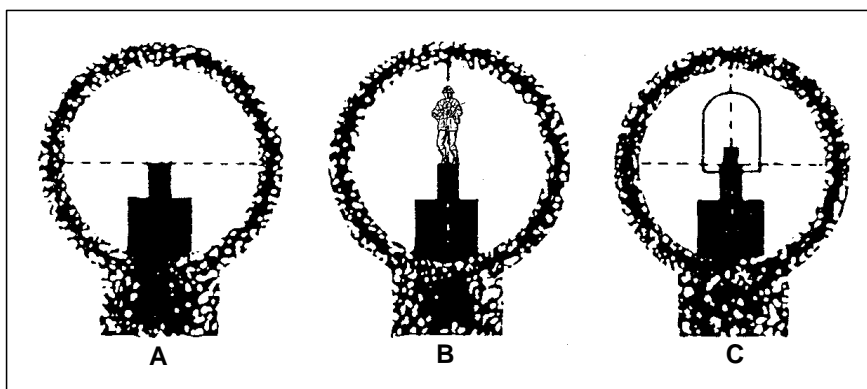
**Figure 4. Underarm firing position.**

d. Hip. The hip firing position is used when closing with the enemy, when a heavy volume of fire in the target area is required, and when rapid movement is not necessary ([Figure 5](#)).



**Figure 5. Hip firing position.**

2. Fire the weapon using the correct sight picture (Figure 6).
  - a. Sight alignment. Center the front sight post in the peep sight (A, Figure 6).
  - b. Sight picture. Center the target over the front sight post (B, Figure 6). If firing on a 10-meter range target, use the sight picture in C, Figure 6.



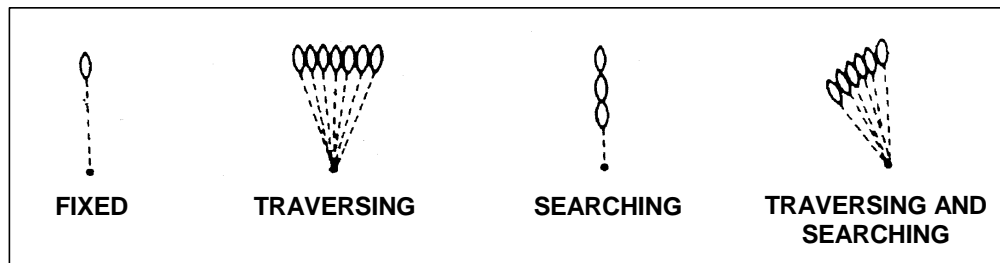
**Figure 6. Sight picture.**

3. Fire the weapon in three-round bursts at the rate of fire appropriate for target size. Use correct trigger manipulation: pull straight to the rear and release.
4. Apply correct engagement technique based on target types (Figure 7).
  - a. Fixed fire. This type of fire is delivered against a point target when the depth and width of the beaten zone will cover the target. Only one aiming point is necessary to cover the target with fire.
  - b. Traversing fire. This type of fire is distributed in width by successive changes in direction. This means moving the muzzle of the weapon to the left or right to distribute fire laterally. To make minor changes in direction, shift the shoulders to the right or left

to select successive aiming points throughout the width of the target area. For major changes, move the elbows and align the body to remain directly behind the gun.

c. Searching fire. This type of fire is distributed in depth by successive changes in elevation. This means moving the muzzle of the weapon up or down to distribute fire in depth. Select successive aiming points in depth throughout the target area. To make changes in elevation, move elbows closer together to lower the muzzle or farther apart to raise the muzzle.

d. Traversing and searching fire. This type of fire is distributed in width and depth by successive changes in direction and elevation. Combining traversing and searching fire provides good coverage of the target. Adjustments are made in the same manner as described for traversing and searching fire. This means moving the muzzle of the weapon to the left or right to distribute fire laterally. To make minor changes in direction, shift the shoulders to the right or left to select successive aiming points throughout the width of the target area. For major changes, move the elbows and align the body to remain directly behind the gun.

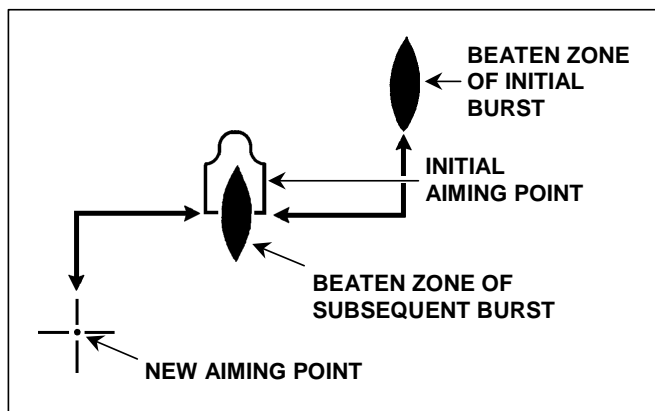


**Figure 7. Classes of fire with respect to the weapon.**

5. Use observation of fire and adjustment of fire to place effective fire on the target.

a. Observation of fire. Observe bursts of fire by noting the strike of the rounds in the target area, the tracers in flight, or, in the case of the 10-meter range, the holes made in the target.

b. Adjustment of fire. Use the adjusted aiming point method to quickly adjust fires without making a sight adjustment. If the initial burst misses the target, rapidly select a new aiming point the same distance from the center of impact of the initial burst but in the opposite direction. Fire a second burst ([Figure 8](#)).

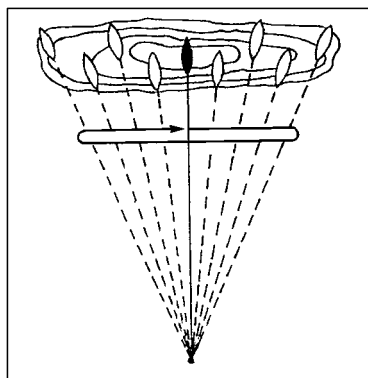


**Figure 8. Adjusted aiming point method.**

6. Use correct application of fire to engage specific targets.
  - a. Point target. Engage point targets with fixed fire ([Figure 9](#)).
  - b. Area target. Initially, aim at the midpoint of the target area. Traverse and search to either flank, then back to the opposite flank ([Figure 10](#)).



**Figure 9. Engagement of point target.**



**Figure 10. Engagement of area target.**



c. Linear target. Initially, aim at the midpoint of the target. Traverse fire to one flank and then to the other to cover the entire target (Figure 11).

d. Deep target. Initially, aim at the midpoint of the target unless another portion of the target is more critical or presents a greater threat. Search down to one aiming point in front of the near end back up to one aiming point beyond the far end (Figure 12).

e. Linear target with depth. Initially, aim at the midpoint of the target unless another portion of the target is more critical or presents a greater threat. Traverse and search to the flank closest to your position then back to the other to cover the entire target (Figure 13).

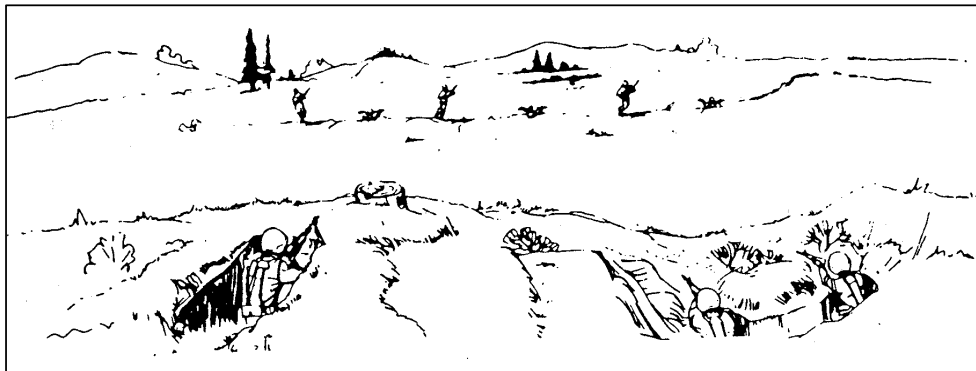
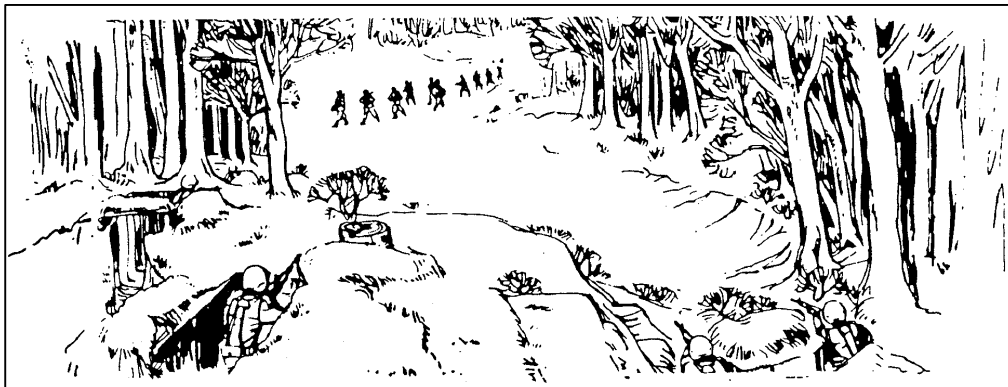


Figure 11. Linear target.



Figure 12. Deep target.



**Figure 13. Linear targets with depth.**

f. Moving target. To hit a moving target, estimate the speed of the target and the lead required to fire and hit it, fire and track the target as it moves, adjust the lead by observing tracers and the strike of the bullets ([Figure 14](#) and [Figure 15](#)).

SPEED IN MILES PER HOUR	RANGE OF TARGET		
	300 M	500 M	900 M
15	1/2 target length	1 target length	2 target lengths

**Figure 14. Vehicle lead table.**

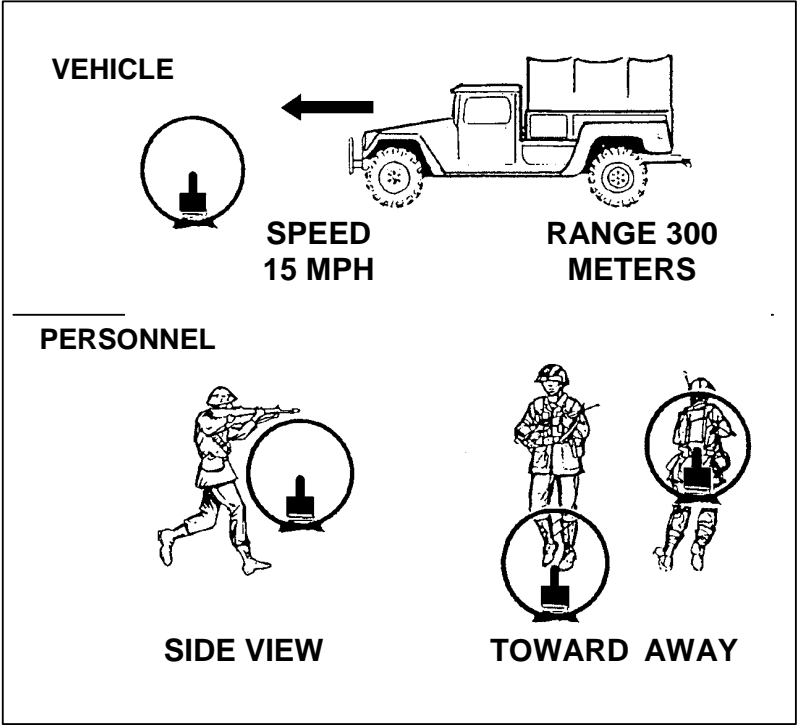


Figure 15. Moving target aiming points.

EVALUATION PREPARATION

*Setup:* Evaluate this task on a live-fire range by having the soldier fire Table IV in FM 23-14. Evaluate the soldier’s ability to use correct engagement techniques to engage specific types of targets. Provide the soldier with equipment and materials required to fire the course.

*Brief Soldier:* Brief soldier on range safety per installation regulations. Tell the soldier to assume the bipod-supported prone position or bipod-supported fighting position. Tell the soldier you are evaluating both his ability to adjust fire and his ability to hit the target.

EVALUATION GUIDE

Performance Measures	Results	
1. Assume correct bipod-supported prone position or bipod-supported fighting position.	P	F
2. Field zero on a 300-meter target with no more than 12 rounds.	P	F
3. Engage single E-type silhouettes (point targets) at various ranges.	P	F

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
4. Engage double E-type silhouettes (automatic weapon positions) at various ranges.	P	F
5. Engage linear E-type silhouettes (troops on line) at various ranges.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
FM 23-14	None

**MOUNT A NIGHT VISION SIGHT AN/PVS-4  
ON AN M249 MACHINE GUN  
071-010-0002**

**CONDITIONS**

Given a cleared M249 machine gun, an AN/PVS-4 mounting bracket assembly for the M249 machine gun, a night vision sight AN/PVS-4, and a requirement to mount the night vision sight AN/PVS-4 on the M249 machine gun.

**STANDARDS**

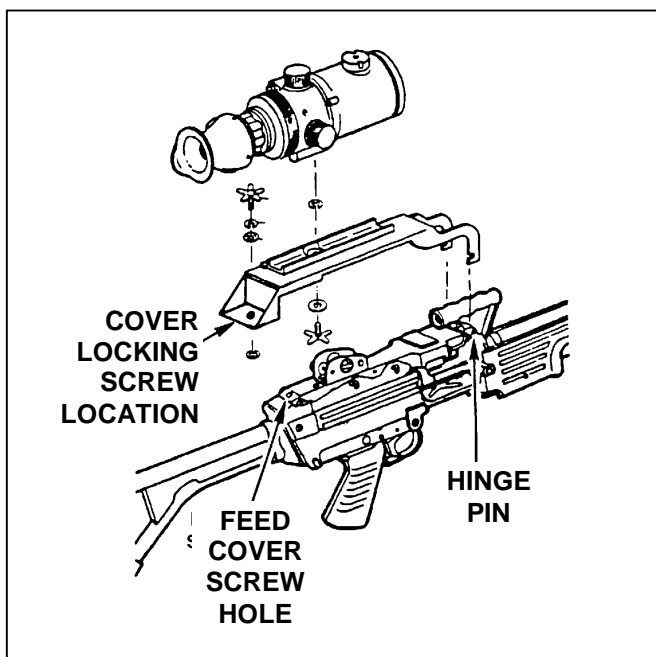
Attach and secure the mounting bracket assembly and night vision sight AN/PVS-4 to the M249 machine gun.

**TRAINING AND EVALUATION**  
**Training Information Outline**

**CAUTION**

When mounting an AN/PVS-4 nightsight on a mounting bracket, align the mounting screw hole on the sight so it fits flush against the mounting bracket locking screw. This prevents you from stripping the threads when you tighten the mounting screw, which would prevent use of the nightsight with the M249.

1. Install the mounting bracket assembly ([Figure 1](#)).
  - a. Hook the mounting bracket feet around the feed cover pin and position the bracket on top of the weapon.
  - b. Turn the mounting bracket locking screw into the feed cover screw hole to secure the bracket.
2. Install the sight on the mounting bracket to the weapon.
  - a. Place the sight on the mounting bracket. Align the mounting screw hole on the sight flush against the mounting bracket locking screw.
  - b. Tighten the sight mounting bracket locking screw to secure the night sight to the bracket.



**Figure 1. Installation of mounting bracket assembly.**

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide the soldier with all the equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier that he must mount night vision sight AN/PVS-4 on the M249 machine gun.

### **EVALUATION GUIDE**

#### **Performance Measures**

1. Install the mounting bracket on the weapon.
2. Install the nightsight on the mounting bracket.

#### **Results**

P	F
P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## **REFERENCES**

### **Required**

TM 11-5855-213-10  
FM 23-14

### **Related**

None

## **ZERO A NIGHT VISION SIGHT AN/PVS-4 TO AN M249 MACHINE GUN 071-010-0001**

### **CONDITIONS**

Given an M249 machine gun with a mounted AN/PVS-4, linked 5.56-mm ammunition, and engageable targets at 25 meters.

### **STANDARDS**

Adjust the AN/PVS-4 so that the three round shot group hits the aiming point on the target.

### **TRAINING EVALUATION** **Training Information Outline**

#### **CAUTION**

When using the nightsight in high light conditions, be sure to use the daylight cover. This prevents the bright light from damaging the nightsight's image intensifier.

**NOTE:** The sight may be zeroed during daylight or darkness. If zeroed during daylight, the daylight cover must be used.

1. Procedures for zeroing the M249 machine gun.
  - a. Make sure the reticle designed for use with the M249 machine gun is installed in the sight.
  - b. Mark the selected target with the appropriate impact point.
  - c. Place the selected target at a range of 25 meters.
  - d. Place the sight in operation. Mount the sight to the weapon. Adjust the azimuth and elevation controls so that the reticle aiming point appears to be centered in the sight's field of view (Figure 1).
  - e. Fire a few rounds to seat the sight on the weapon. Retighten all mounting screws and knobs.
  - f. Place the zeroing range aiming point of the reticle on the target aiming point. Fire enough rounds to obtain a good shot group. Locate the center of the shot group (Figure 2).
  - g. Determine the distance (up/down and right/left) between the center of the shot group and the impact point on the target.
  - h. Adjust the reticle to move the center of the shot group the measured distance to the impact point. Repeat steps *f* and *g* until the impact point on the target is at the center of the shot group. The sight is now zeroed to the weapon.





## EVALUATION PREPARATION

*Setup:* At the test site, provide the soldier with all the equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier that he must zero a night vision sight AN/PVS-4 to an M249 machine gun.

## EVALUATION GUIDE

### Performance Measures

### Results

Zero the AN/PVS-4 to an M249 machine gun.

P      F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

TM 11-5855-213-10  
FM 23-14

### Related

None

## **ENGAGE TARGETS WITH AN M249 MACHINE GUN USING A NIGHT VISION SIGHT AN/PVS-4 071-010-0007**

### **CONDITIONS**

During darkness, given an M249 machine gun equipped with a mounted night vision sight AN/PVS-4 that has been zeroed to the gun; linked 5.56-mm ammunition; engageable targets in the assigned sector of fire; and a requirement to engage the targets.

### **STANDARDS**

Fire the M249 machine gun to effectively engage targets in the assigned sector of fire. Apply correct M249 machine gun target engagement techniques using night vision sight AN/PVS-4. Engage and hit each target.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Place night vision sight AN/PVS-4 into operation (see task 071-315-0003, Operate a Night Vision Sight AN/PVS-4).
2. Assume a bipod-supported prone position or a bipod-supported fighting position. (These are the best positions for delivering effective M249 fire on targets when using the night vision sight AN/PVS-4.)
3. Detect and estimate range to the target.
4. Acquire a good sight picture. Adjust the weapon to place the correct aiming point (based on range to target) on the center base of the target.
5. Use the center point between the two horizontal lines in the middle of the reticle as the aiming point for ranges 0 to 300 meters.

**NOTE:** Aiming points for ranges from 300 to 800 meters appear as small dots in a vertical line down through the center of the reticle.

- a. Use Aiming Points 4 and 6 (400 and 600 meter) to fire at 400- and 600-meter targets, respectively.
- b. Use Aiming Point 8 (800 meter) to fire at 700-meter targets.
- c. Use Aiming Point 10 (1,000 meter) to fire at 800-meter targets.

6. Fire the weapon in three-round bursts at the rate of fire appropriate for the size of the target. Use correct trigger manipulation techniques, that is, pull the trigger straight to the rear, then release it.

7. Apply correct engagement technique based on target types.

a. Fixed fire. This is fire delivered against a point target, that is, against one aiming point, when the depth and width of the beaten zone covers the target completely.

b. Traversing fire. This is fire distributed in width by successive changes in direction. This means moving the muzzle of the weapon to the left or right to distribute fire laterally. To make minor changes in direction, shift the shoulders to the right or left to locate successive aiming points throughout the width of the target area. For major changes, move the elbows, and align the body to remain directly behind the gun.

c. Searching fire. This is fire distributed in width by successive changes in elevation. This means moving the muzzle of the weapon up or down to distribute fire in depth and choosing successive aiming points in depth throughout the target area. To make changes in elevation, move elbows closer together (this lowers the muzzle) or farther apart (this raises the muzzle).

d. Traversing and searching fire. This is fire distributed in width and depth by successive changes in direction and elevation. Combining traversing and searching fire provides good target coverage. Make adjustments the same way you would for traversing or searching fire. This means moving the muzzle of the weapon to the left or right to distribute fire laterally. To make minor changes in direction, shift the shoulders to the right or left and choose successive aiming points throughout the width of the target area. For major changes, move the elbows and align the body to remain directly behind the gun.

8. Use observation of fire and adjustment of fire to place effective fire on the target.

a. Observation of fire. Observe bursts of fire by noting the strike of the rounds in the target area or by observing tracers in flight.

b. Adjustment of fire. Use the adjusted aiming point method to quickly adjust fires without adjusting the sight. If the initial burst misses the target, rapidly select a new aiming point the same distance from the center of impact of the initial burst, but in the opposite direction. Fire a second burst.

9. Apply fire correctly to engage specific targets.

a. Point target. Engage point targets with fixed fire.

b. Area target. Initially aim at the midpoint of the target area. Traverse and search to either flank, then back to the opposite flank.

c. Linear target. Initially aim at the midpoint of the target. Traverse fire from one flank to the other to cover the entire target.

d. Deep target. Initially aim at the midpoint of the target, unless another portion of the target is more critical or presents a greater threat. Search down to an aiming point in front of the near end, then back up to an aiming point beyond the far end.

e. Linear target with depth. Initially aim at the midpoint of the target, unless another portion of the target is more critical or presents a greater threat. Traverse and search to the flank closest to your position, then back to the other flank to cover the entire target.

f. Moving target. To hit a moving target; estimate the speed of the target and the lead required to hit it. Fire, then track the target as it moves. Adjust the lead by observing tracers and bullet strikes.

### EVALUATION PREPARATION

*Setup:* Evaluate this task on a live-fire range. Have the soldier fire Table III, Tasks 2 through 6 (FM 23-14, page 5-49). Evaluate the soldier's ability to use correct engagement techniques to engage specific types of targets. Provide the soldier with equipment and materials required to fire Table III, tasks 2 through 6.

*Brief Soldier:* Brief the soldier on range safety IAW installation SOP. Tell the soldier to assume the bipod-supported prone position or the bipod-supported fighting position. Tell him you are evaluating his ability to place effective fire on targets using the AN/PVS-4-equipped M249 machine gun.

### EVALUATION GUIDE

Performance Measures	Results	
1. Place a night vision sight AN/PVS-4 into operation.	P	F
2. Assume a correct bipod-supported prone position or bipod-supported fighting position.	P	F
3. Detect and estimate the range to the target.	P	F
4. Place effective fire on targets in three-round bursts at a rate of fire appropriate for the size of the target.	P	F
5. Apply correct engagement techniques based on the types of targets.	P	F
6. Apply fire correctly to engage specific targets.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

**Required**  
FM 23-14

**Related**  
None

## **DISMOUNT A NIGHT VISION SIGHT AN/PVS-4 FROM AN M249 MACHINE GUN 071-010-0003**

### **CONDITIONS**

Given an M249 machine gun with a mounted night vision sight AN/PVS-4, carrying case for night vision sight AN/PVS-4, and a requirement to remove the night vision sight AN/PVS-4 from the M249 machine gun.

### **STANDARDS**

Remove the night vision sight AN/PVS-4 and mounting bracket assembly from the M249 machine without damage to equipment.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Remove the sight from the mounting bracket assembly.
  - a. Loosen the sight mounting screw by turning it counterclockwise until it is free of the sight.
  - b. Remove the sight from the mounting bracket.
2. Remove the mounting bracket assembly.
  - a. Loosen the mounting bracket screw until it is free of the feed cover mechanism.
  - b. Lift the mounting bracket assembly from the M249.
3. Stow night vision sight AN/PVS-4 and mounting bracket assembly.
  - a. Remove the batteries from the sight.
  - b. Place the sight and bracket in the carrying case.

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide the soldier with all the equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier that he must remove and stow the night vision sight AN/PVS-4 and mounting bracket assembly without damage to equipment.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Remove the sight from the mounting bracket assembly.	P	F
2. Remove the mounting bracket assembly.	P	F
3. Stow night vision sight AN/PVS-4 and mounting bracket assembly.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
TM 11-5855-213-10	None
FM 23-14	



## M60 MACHINE GUN

### CONSTRUCT A FIGHTING POSITION FOR AN M60 MACHINE GUN 071-312-3004

#### CONDITIONS

Given load-bearing equipment (LBE) with bayonet, scabbard, entrenching tool, poncho, individual weapon, M60 machine gun with all components, the specific location and sectors of fire for the position to be constructed, and logs to construct overhead cover.

**NOTE:** The position should incorporate natural cover such as mounds of earth, stumps, trees, or rocks. The position must have observation and general fields of fire. Selective clearing begins after the crew digs the position.

#### STANDARDS

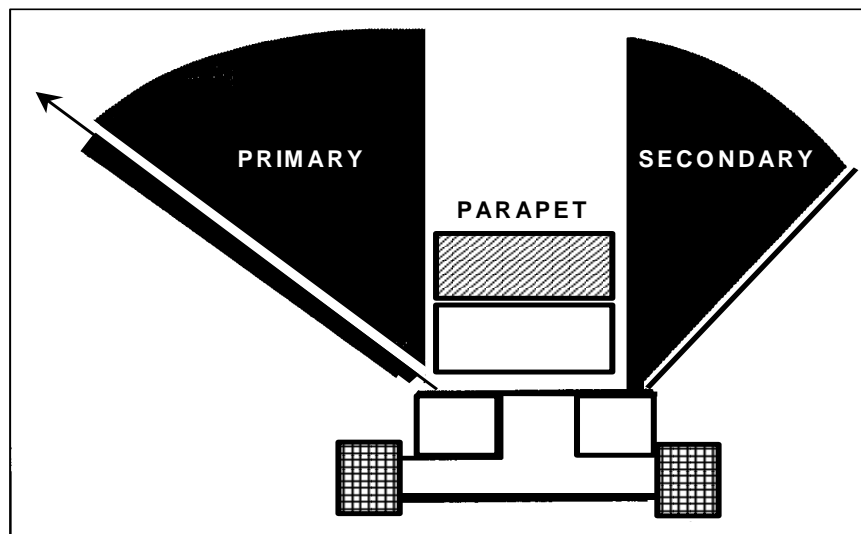
Ensure position provides frontal and rear protection and overhead cover for the gun crew, and that it allows coverage of primary and secondary sectors of fire.

#### TRAINING AND EVALUATION Training Information Guide

Cover	The position is protected by a natural or man-made parapet. The parapet should be thick enough to protect from direct small-arms fire and high enough to hide the helmets of soldiers in the position. Also, the position should be protected from indirect fire (shrapnel) by at least 12 inches of dirt and log overhead.
Concealment	The position is not easily detected from the front. It blends with surroundings so an approaching soldier, about 35 meters to the front (hand-grenade range), cannot detect it. Aerial protection prevents observation from the air.
Fields of fire	The position provides good observation and fields of fire in both sectors, without destroying natural camouflage.
Size and shape	The position is armpit deep and wide enough to allow two soldiers with LBE to move freely. The position must have two distinct firing platforms whenever possible ( <a href="#">Figure 1</a> ).

Other  
requirements

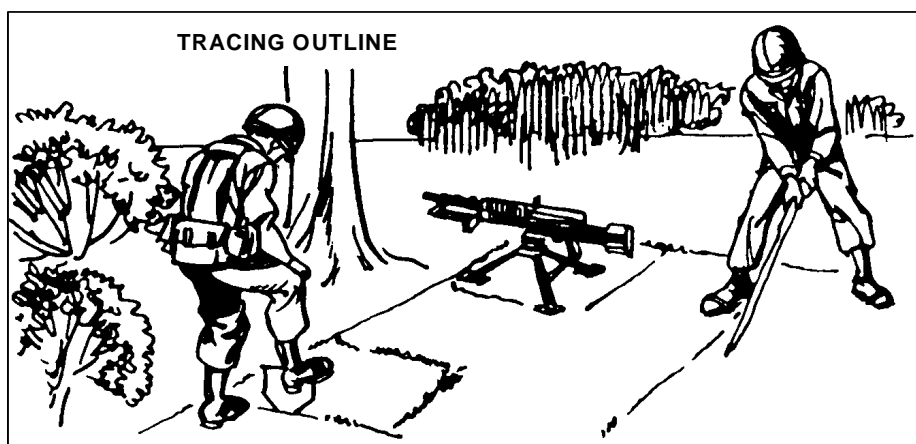
The position must also include a grenade trench, a sloping floor with shallow trench for drainage, and a rear parapet. The rear parapet protects against small arms fire from the rear and from shrapnel.



**Figure 1. Layout of the position.**

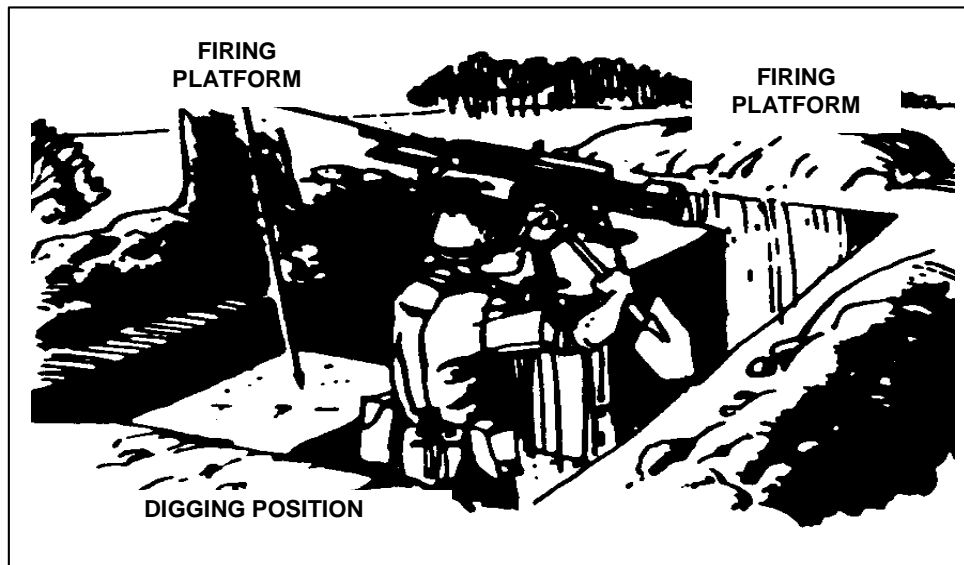
1. After receiving the position of the machine gun, sector(s) of fire, and the final protective line (FPL) or principal direction of fire (PDF) from the platoon leader, the crew—

- a. Marks where to position the tripod legs to lay the gun on the FPL or PDF.
- b. Marks the limits of the sector of fire.
- c. Traces the outline of the hole and frontal cover ([Figure 2](#)).



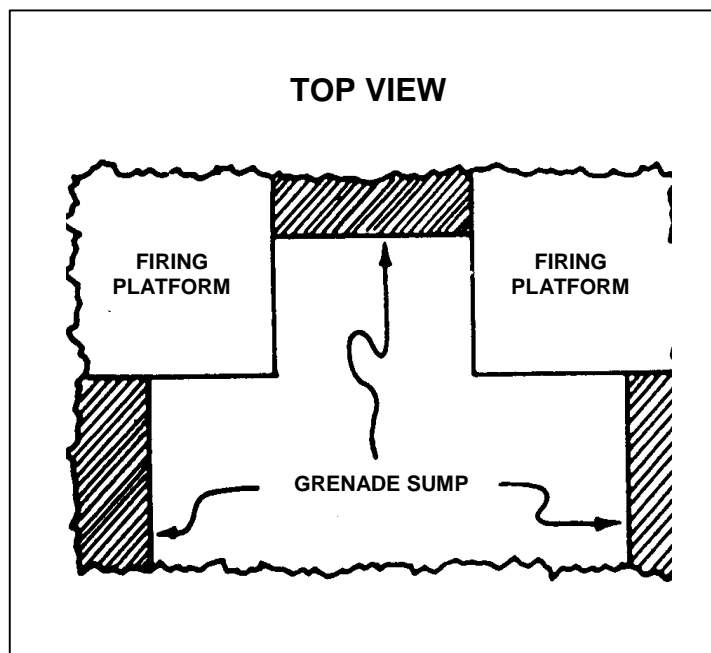
**Figure 2. Outline of the position.**

2. The crew digs firing platforms first. After digging the platforms 4 to 6 inches deep, they position the machine gun on one of the platforms, ensuring it covers the primary sector of fire. Then they complete the remaining part of the position around the firing platforms (Figure 3). Placing the machine gun on the firing platform at this time—
  - a. Lessens exposure in the event the crew must fire before completing the position.
  - b. Reduces the height of the frontal cover needed.
3. The crew digs the hole, places some of the dirt where they need frontal cover, and uses the rest for flank and rear cover. They dig the hole deep enough to protect themselves, but at a depth that still allows the gunner to fire comfortably—about armpit deep.



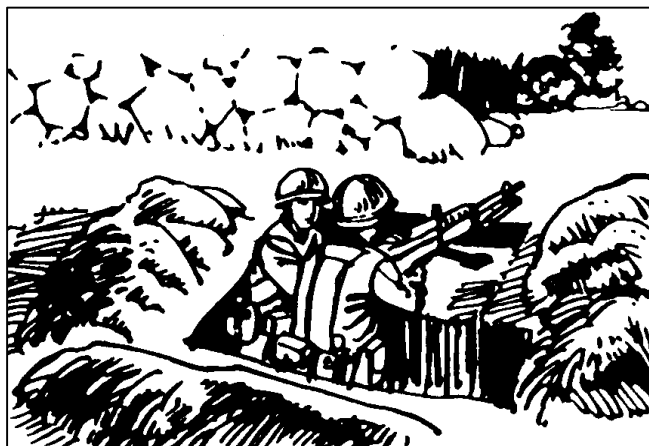
**Figure 3. Preparation of the position and firing platforms.**

4. The crew digs three trench-shaped grenade sumps at various points so any of them can kick a grenade into one (Figure 4).



**Figure 4. Location of grenade sumps.**

5. When a position has no secondary sector of fire, the crew digs only half of the position ([Figure 5](#)).



**Figure 5. Single-sector position.**

6. The crew builds overhead cover for a machine gun position the same as for a two-man fighting position ([Figure 6](#))



**Figure 6. Machine gun position with overhead cover.**

7. When the machine gun has a three-soldier crew, the ammunition bearer digs a one-person fighting position to the flank. This flank position allows him to see and fire to the front and oblique (Figure 7).



**Figure 7. Ammunition bearer in position.**

8. Usually, the ammunition bearer positions himself on the same side as the FPL or PDF. This allows him to cover the machine gun's secondary sector as well as to see the gunner and assistant gunner.

9. The ammunition bearer's position is connected to the gun position by a crawl trench. This allows him to deliver ammunition or to replace a crew member.

## EVALUATION PREPARATION

*Setup:* This task should be evaluated during a unit's field training exercise. At the test site, provide all equipment and materials given in the task conditions statement. The location selected should contain all of the characteristics of a good machine gun position.

- NOTES:** 1. The position's degree of completion depends on the time available.
2. During training, comply with unit SOP and any local regulations concerning the cutting of live vegetation, digging holes, and preventing erosion.

*Brief Soldier:* Tell the soldier to position the machine gun to cover the FPL or the PDF, to outline the position on the ground, and to construct the position to meet all requirements.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Position the machine gun to lay on the FPL or PDF.	P	F
2. Ensure that the secondary sector can also be covered.	P	F
3. Outline the position on the ground.	P	F
4. Dig the firing platform first.	P	F
5. Position the machine gun on the firing platform to cover the FPL or PDF.	P	F
6. Construct frontal, flank, and rear cover.	P	F
7. Complete construction of the position to the extent required.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
None	FM 7-7 FM 7-8

## ZERO AN M60 MACHINE GUN 071-312-3030

### CONDITIONS

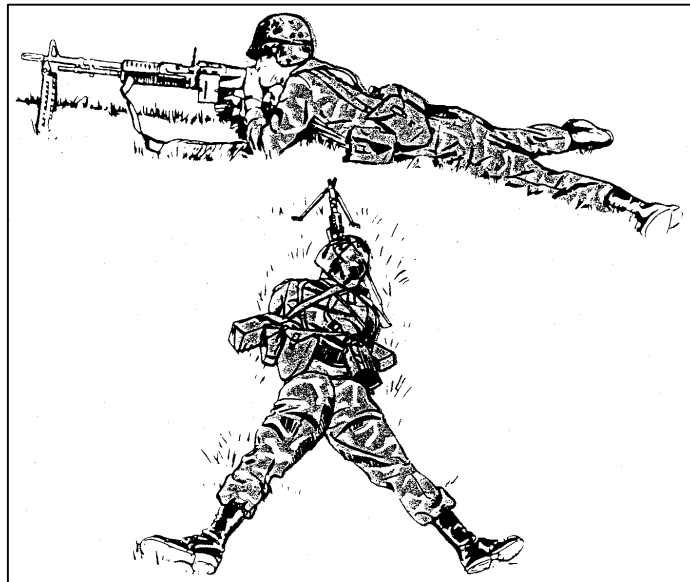
Given an M60 machine gun on a live fire range or on terrain where you are permitted to fire the M60, a 300-meter target, and a 30-round belt of linked 7.62 ammunition.

### STANDARDS

Using no more than 30 rounds, adjust the sights on the M60 machine gun so that a correct sight picture causes a fired round to impact the target at the point of aim.

### TRAINING AND EVALUATION Training Information Outline

1. Set the sights for initial firing.
  - a. Elevation. Index the known range (300 meters) to the target on the elevation scale.
  - b. Windage. Align the windage index on zero windage.
2. Assume a good stable firing position ([Figure 1](#) and [Figure 2](#)).



**Figure 1. Prone position (bipod).**



**Figure 2. Prone position (tripod).**

3. Fire a six- to nine-round burst at the center base of the target. Note where the burst strikes in relation to the target.
4. Adjust the sights if needed, so that rounds impact on the target.
  - a. Adjust sights for deflection. Determine if the center of the beaten zone is left or right of the target. Correct by moving the windage knob the necessary number of clicks in the direction of the target. One click or 1 mil on the windage knob moves the line of aim 1 meter at 1,000 meters ([Figure 3](#)).

RANGE (METERS)	ONE CLICK OF WINDAGE KNOB MOVES LINE OF AIM
1,000	1.0 METER
700	0.7 METER
600	0.6 METER
500	0.5 METER
400	0.4 METER
300	0.3 METER

**Figure 3. Windage chart.**

**EXAMPLE:** If the target is at 500 meters, and the center of the beaten zone is 1 meter left of the target, then move the windage knob 2 clicks to the right.

- b. Adjust the sights for elevation. Determine if the center of the beaten zone is above (high) or below (low) the point of aim. Make elevation changes accordingly. Because determining this relationship is difficult, you must rely on trial and error until you learn to make reliable estimates.
5. Fire a confirming burst. If the round does not hit the target, repeat Steps 3 and 4 until it does.



6. Adjust the elevation scale to reflect the range to the target. Record deflection for future use.

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide all equipment and materials in task conditions.

*Brief Soldier:* Indicate the target and the range to the target. Tell the soldier he has 30 rounds to zero the M60.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Set sights for initial firing.	P	F
2. Assume a good stable prone firing position.	P	F
3. Fire a six- to nine-round burst at the center base of the target. Note where the burst strikes.	P	F
4. Adjust the sights so that rounds impact the target area.	P	F
5. Fire a confirming burst.	P	F
6. Adjust the elevation scale to reflect range to the target.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b> FM 23-67	<b>Related</b> None
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## **ZERO A NIGHT VISION SIGHT AN/PVS-4 TO AN M60 MACHINE GUN 071-315-2313**

### **CONDITIONS**

Given a target at a distance of 25 meters, a zeroed M60 machine gun with a mounted AN/PVS-4, 20 rounds of ammunition, and a device to measure 11.9 centimeters or 4 5/8 inches.

### **STANDARDS**

Adjust the AN/PVS-4 controls: align the sight reticle zero range aiming point on the target aiming point so that the shot group is 11.9 centimeters or 8.5 squares below the target aiming point.

### **TRAINING AND EVALUATION** **Training Information Outline**

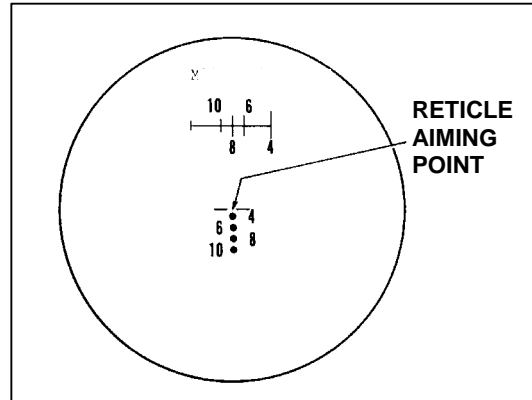
#### **WARNING**

**To prevent eye injury from weapon recoil, attach the eye guard to the sight before firing the weapon.**

#### **CAUTION**

The sight may be zeroed in daylight or darkness. However, if zeroing during bright daylight, use the daylight cover to avoid damaging the image-intensifier assembly.

1. Turn on the sight.
2. Place the zeroing range aiming point of the reticle on the target aiming point by adjusting the azimuth and elevation actuators ([Figure 1](#)).



**Figure 1. Reticle aiming point.**

3. Fire three rounds to seat the sight on the gun. Retighten the mounting knob.
4. Fire three rounds (single shot) to obtain a good shot group.
5. Locate the center of the shot group.
6. From the center of the shot group, adjust as needed to move the shot group to the point 11.9 centimeters, or 4 5/8 inches, directly below the target aiming point. On the target sheet, this point is slightly outside the target area, as shown in [Figure 2](#). On the 25-meter zeroing target for the M16A2 rifle, each square measures 0.9 centimeter. (The squares on the 25-meter zeroing target for the M16A1 rifle measure 0.7 centimeter each). [Figure 3](#) shows the location of the controls.

**EXAMPLE:** To adjust the shot group in [Figure 2](#) to the desired point of impact (shown)—

#### **WINDAGE**

Determine the correction for windage.

Count how many squares the center of the shot group is from the vertical "0" lines (3.3 squares away, in this example).

$$\frac{(\text{number of squares} \times 0.9)}{0.63} = \text{number of windage clicks}$$

- Multiply this by the width of each square (0.9 centimeter). This gives the result 2.97.
- Divide this by 0.63 (the distance one click of windage on the AN/PVS-4 moves the strike of the round).
- The final answer is the number of windage clicks needed to center the shot group:

$$\frac{3.3 \times 0.9}{0.63} = \frac{2.97}{0.63} = 4.7 \text{ clicks (round to 5)}$$

Move the azimuth adjustment actuator 5 clicks counterclockwise to adjust for windage.

*(Example continues on next page)*

(Continued from Previous Page)

### ELEVATION

Determine the correction for elevation. In this example, the desired point of impact is 2.9 centimeters outside the target area, so add 2.9 to the measurement of the squares:

$$\frac{(\text{number of squares} \times 0.9) + 2.9}{0.63} = \text{number of windage clicks}$$

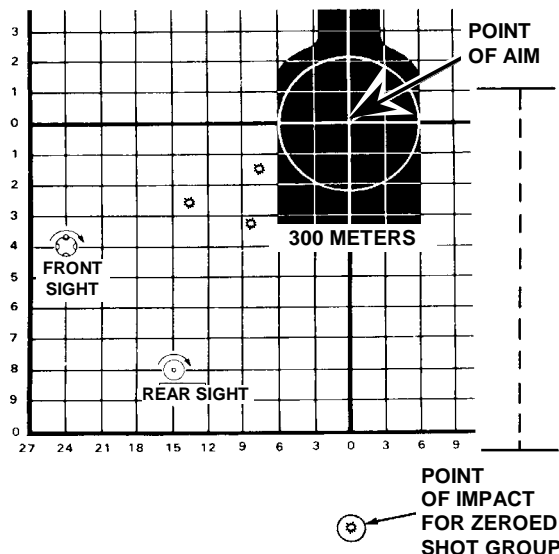
$$\frac{(6.8 \times 0.9) + 2.9}{0.63} = \frac{6.12 + 2.9}{0.63} = \frac{9.02}{0.63} = 14.31 \text{ clicks (round to 14)}$$

Move the elevation adjustment actuator 14 clicks counterclockwise to adjust for elevation.

**NOTE:** Each click of the azimuth or elevation adjustment actuator moves the strike of the round 0.63 centimeter, or 1/4 inch, at a range of 25 meters.

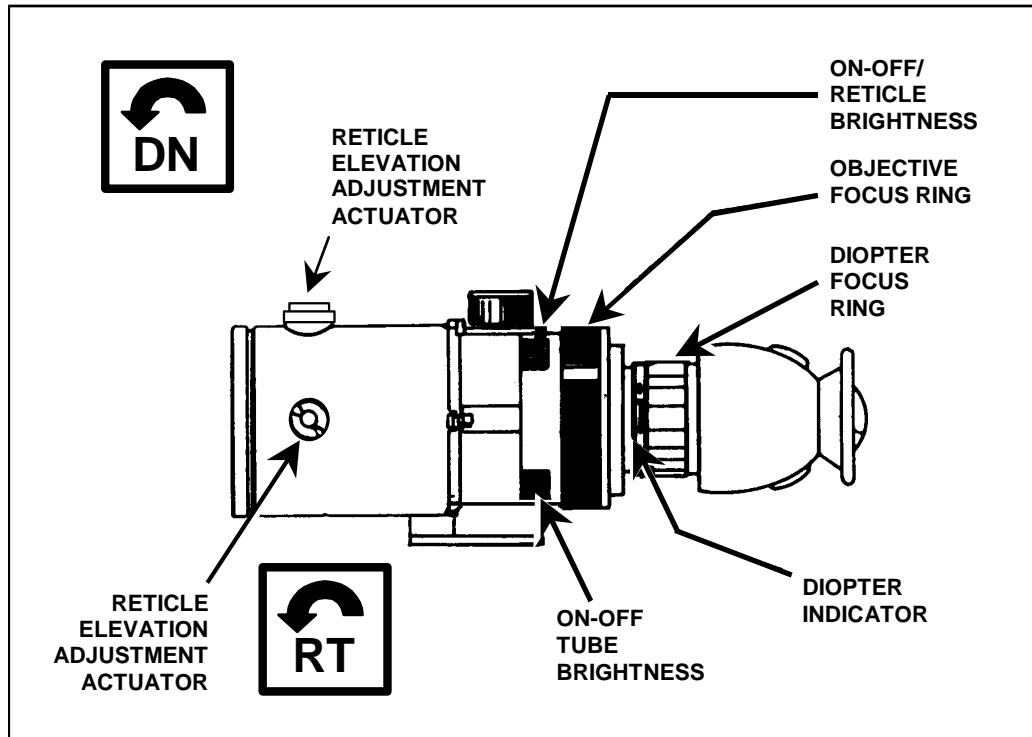
### ZERO TARGET DATA

1. Rotate rear sight elevation knob to the 8/3 setting, then up (right) one click past the 300 mark, for zeroing at 25 meters.
2. Aim at target center. Adjust sights to move shot group center as close as possible to the white dot in the center of the target.



**Figure 2. Aiming point and point of impact.**

7. Once you have adjusted for windage and elevation—
  - a. Realign the reticle aiming point to the target aiming point by moving the complete weapon system.
  - b. DO NOT realign the aiming points by adjusting the azimuth and elevation actuators.
8. Repeat the process until the center of the shot group is at the point 11.9 centimeters, or 4 5/8 inches, below the target aiming point.



**Figure 3. Location of controls.**

### EVALUATION PREPARATION

*Setup:* At the test site, provide all equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier to zero the AN/PVS-4 to an M60 machine gun using 20 rounds or less.

### EVALUATION GUIDE

Performance Measures	Results	
1. Place the AN/PVS-4 into operation.	P	F
2. Adjust for windage using correct number of clicks.	P	F
3. Adjust for elevation using correct number of clicks.	P	F
4. Achieve a good third shot group.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

#### **Required**

None

#### **Related**

TM 11-5855-213-10

## ENGAGE TARGETS WITH AN M60 MACHINE GUN USING A NIGHT VISION SIGHT AN/PVS-4 071-315-0008

### CONDITIONS

At night, given a zeroed M60 machine gun with a mounted and zeroed AN/PVS-4, targets between 100 and 350 meters, and a belt of ammunition.

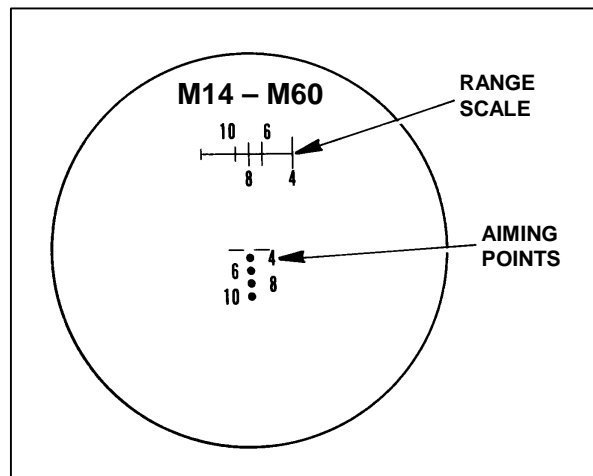
### STANDARDS

Acquire, engage, and suppress each target in sector and suppress, destroy, or kill each one.

### TRAINING AND EVALUATION Training Information Outline

**NOTE:** Ensure the AN/PVS-4 is equipped with the proper sight reticle ([Figure 1](#)).

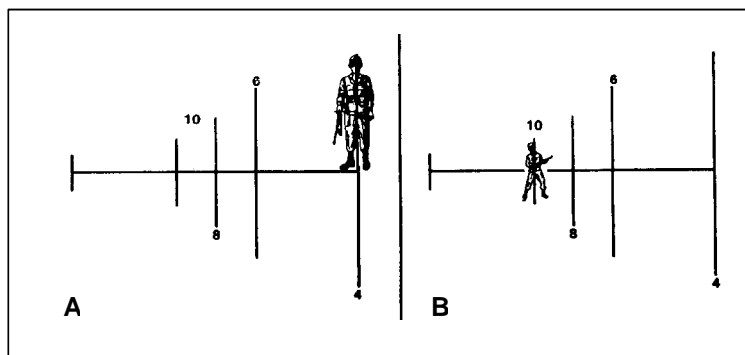
1. Place the sight into operation (see Task 071-315-0003, Place an AN/PVS-4 into Operation).
2. Use the sight reticle. The AN/PVS-4 sight reticle consists of two parts when it is used with the M60 machine gun ([Figure 1](#)).



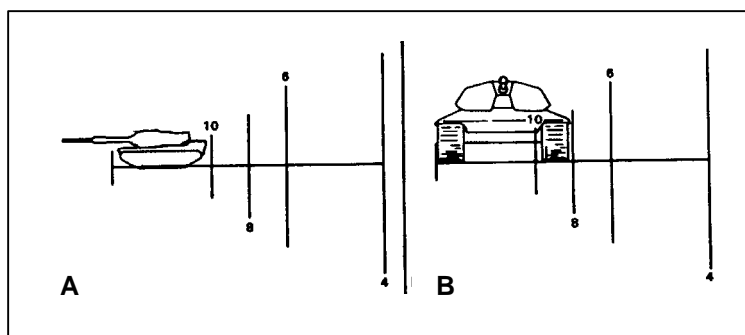
**Figure 1. Sight reticle.**

- a. The upper part of the reticle (range scale) is used to determine range to the target.
- b. The lower part of the reticle is used for aiming the weapon.

3. Determine range to target.
  - a. The vertical lines on the range scale tell how far away a 6-foot man is.
    - (1) Place the target on the horizontal line and match it with one of the vertical lines (A, Figure 2).
    - (2) Read the number at the bottom or top of the vertical line. That is the distance in hundreds of meters to the target.
    - (3) If the figure is the same height as the vertical line above and below the horizontal line, the distance is half the number at the top or bottom of that line (B, Figure 2). In A, Figure 2, the man above the horizontal line is 400 meters away; the man in B, Figure 2, is 200 meters away.
  - b. The horizontal line of the range scale indicates the range (in hundreds of meters) of a 20-foot target such as a tank or large truck viewed from the side.
    - (1) Place the left edge of the vehicle at the left side of the horizontal line (Figure 3).
    - (2) The range to the tank is read from the scale at the right edge of the tank. As shown in A, Figure 3, the range to the vehicle is 1,000 meters.
    - (3) When viewed from the front or rear, the vehicle's width is about half its length. Placement of the vehicle width on the range scale is read as half the range scale value. As shown in B, Figure 3, the range to the vehicle is 400 meters.



**Figure 2. Range determination using vertical lines.**



**Figure 3. Range determination using horizontal lines.**

4. Engage targets using the sight reticle.



**WARNING**

**To prevent eye injury from weapon recoil, attach the eye guard to the sight before firing the weapon.**

- a. The M60 aiming point for ranges out to 250 meters is the center of the two horizontal lines (zero aiming point) (Figure 4). The numbered dots below the horizontal lines are the aiming points for each even-numbered hundred meters. The odd-numbered hundred meter aiming points are between the dots.
- b. Locate the target, estimate the range, and place the proper aiming point on the target.
- c. Fire the weapon using correct marksmanship procedure.

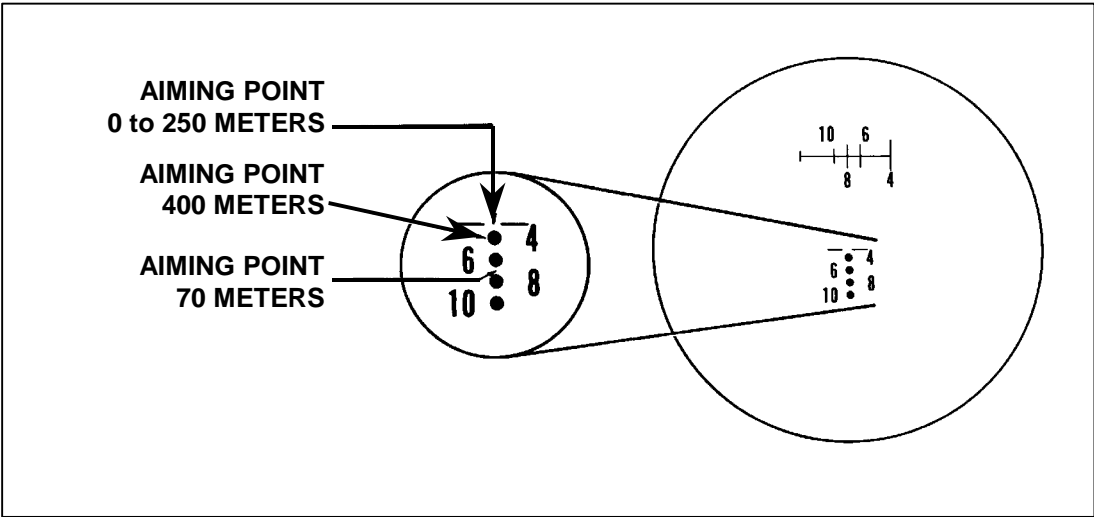


Figure 4. Zero aiming point.

EVALUATION PREPARATION

*Setup:* At a live-fire range, provide the equipment and material shown in the task conditions statement.

*Brief Soldier:* Tell the soldier to engage all targets and hit each one at least once.

EVALUATION GUIDE

Performance Measures	Results	
1. Place the AN/PVS-4 into operation.	P	F

**EVALUATION GUIDE****Performance Measures****Results**

- |   |   |   |
|---|---|---|
| 2. Engage targets.  | P | F |
| a. Engage a 100- to 350-meter target with at least one hit. |   |   |
| b. Engage a 250-meter target with at least one hit.         |   |   |
| c. Engage a 250- to 300-meter target with at least one hit. |   |   |
| 3. Take the AN/PVS-4 out of operation.                      | P | F |

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

None

**Related**FM 23-67  
TM 11-5855-213-10

# CALIBER .50 MACHINE GUN

## MAINTAIN A CALIBER .50 M2 MACHINE GUN 071-022-0001

### CONDITIONS

Given a caliber .50 M2 HB machine gun, M3 tripod, MK64 gun cradle mount, pintle, traversing and elevating (T&E) mechanism, linked caliber .50 ammunition, headspace and timing gauge, cleaner lubricant and preservative (CLP), rifle bore cleaner (RBC), lubricating oil arctic weather (LAW), lubricating oil general purpose (PL-M), lubricating oil semi-fluid (LSA), carbon removing compound, the bore brush, wiping rags, M4 cleaning rod, small arms (2-inch) cleaning swabs, and a wooden block.

### STANDARDS

Clean and lubricate the caliber .50 M2 HB machine gun and its components. Clean and inspect all parts and ammunition and turn in for maintenance those found to be unserviceable. Assemble the gun so that it is operational.

### TRAINING AND EVALUATION

#### Training Information Outline

1. Clear the caliber .50 machine gun.
  - a. Unlock the bolt latch release and raise the cover (Figure 1).
  - b. Pull and lock the bolt to the rear, leaving the retracting slide handle to the rear.
  - c. Inspect the chamber and T-slot to make sure they hold no rounds.
  - d. Place a wooden block inside the receiver, between the bolt and the rear of the barrel.

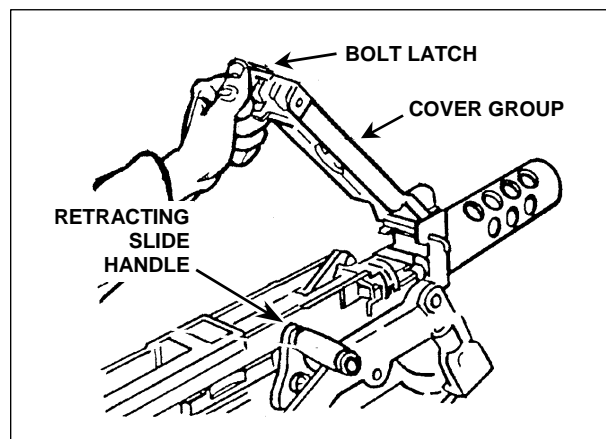


Figure 1. Raising the cover.

e. Insert the cleaning rod in the muzzle end of the barrel until you can see the rod in the receiver. Remove the cleaning rod.

f. Grasp the retracting slide handle, press the bolt latch release, and ease the bolt forward. Close the cover.

2. Disassemble the machine gun.

a. Remove the barrel assembly.

(1) Raise the cover group (Figure 1).

(2) Grasp the retracting slide handle with the right hand, palm up. Pull the bolt to the rear until the barrel locking spring lug aligns with the 3/8-inch hole in the right side plate of the receiver (Figure 2).

(3) Place the smallest loop of a caliber .50 link between the trunnion block and the barrel extension (Figure 2). This keeps the barrel locking spring lug aligned with the 3/8-inch hole.

(4) Unscrew the barrel from the receiver. Be careful not to damage the threads or barrel locking notches.

(5) Remove caliber .50 link to allow the bolt to go forward slowly. Make sure the bolt group does not slam forward with the barrel removed.

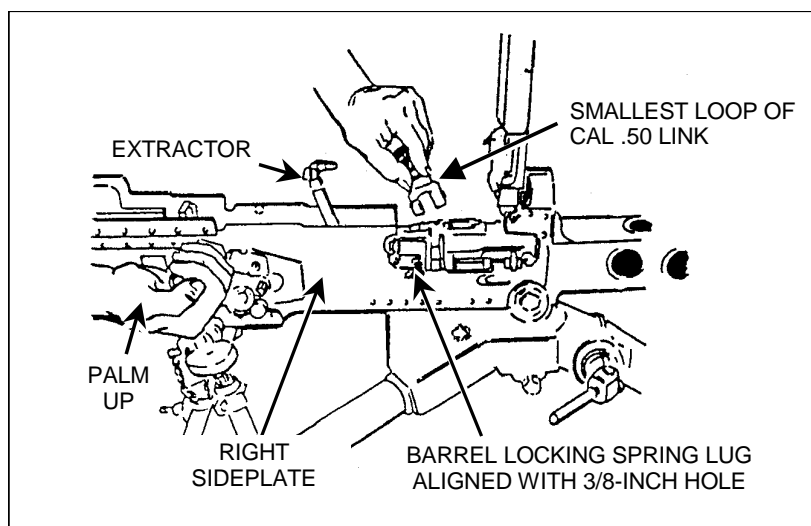


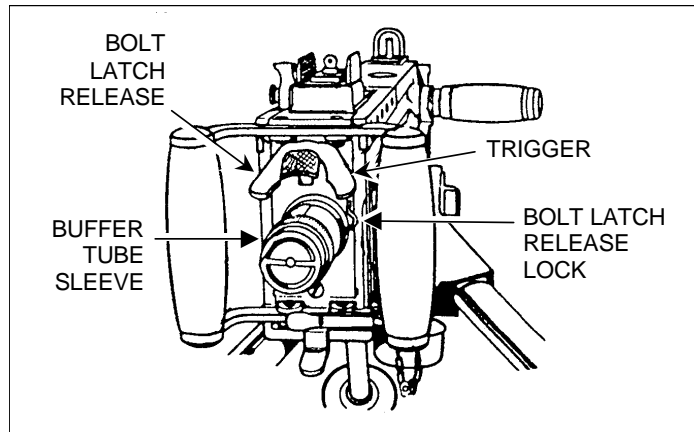
Figure 2. Alignment of the lug.

b. Remove the backplate assembly.

**WARNING**

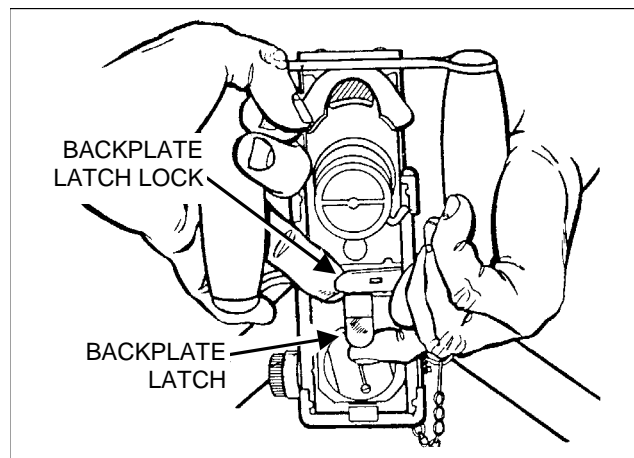
Do not remove the backplate unless the bolt is in the forward position. When removing the backplate, stand to one side of the weapon to avoid possible injury from the driving spring rod.

(1) Ensure that the bolt is forward and the bolt latch release is unlocked (in the single shot mode) (Figure 3).



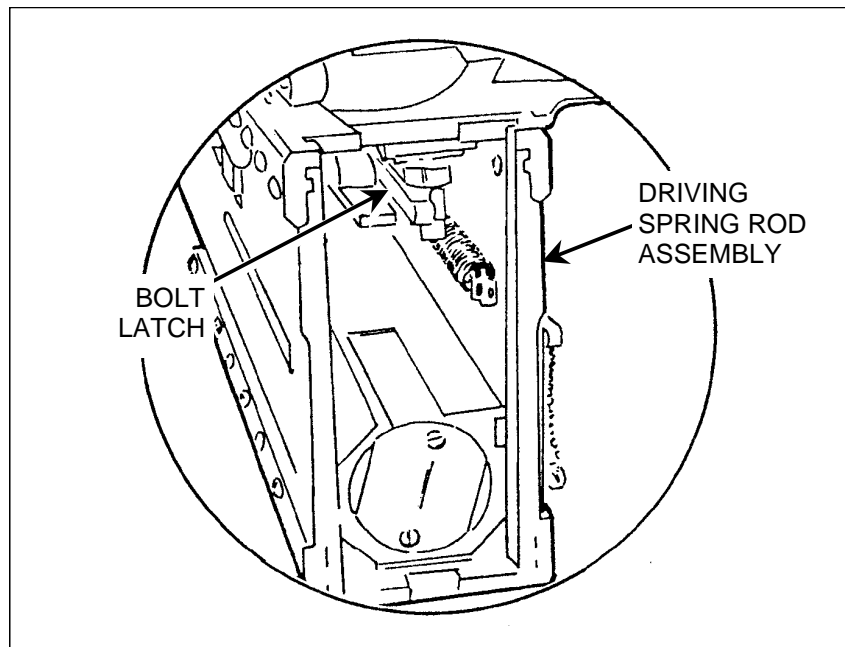
**Figure 3. Releasing the bolt latch.**

(2) Pull the backplate latch lock straight back while lifting up on the backplate latch (Figure 4).



**Figure 4. Removal of the backplate.**

- (3) Remove the backplate assembly by lifting straight up.  
c. Remove the driving spring rod assembly (Figure 5).



**Figure 5. Removal of the driving spring rod assembly.**

(1) Push the rear of the driving rod assembly forward and to the left to free it from the side of the receiver.

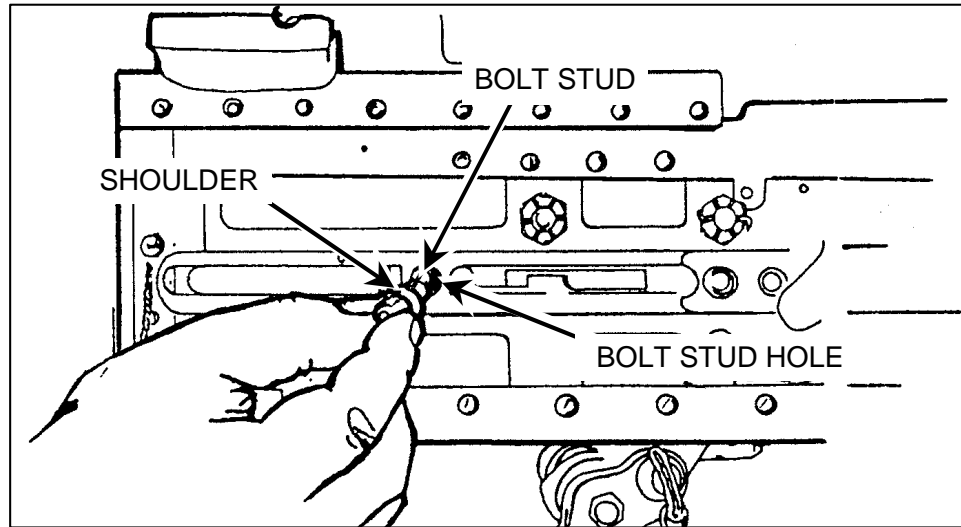
#### **WARNING**

**Never try to charge the machine gun while the backplate is off and the driving spring rod assembly is in place. If the backplate is off and the driving spring assembly is compressed, the retaining pin on the driving spring can slip from its seat in the side plate. This could cause serious injury to anyone behind the machine gun.**

(2) Pull the driving spring rod assembly to the rear and out of the receiver.

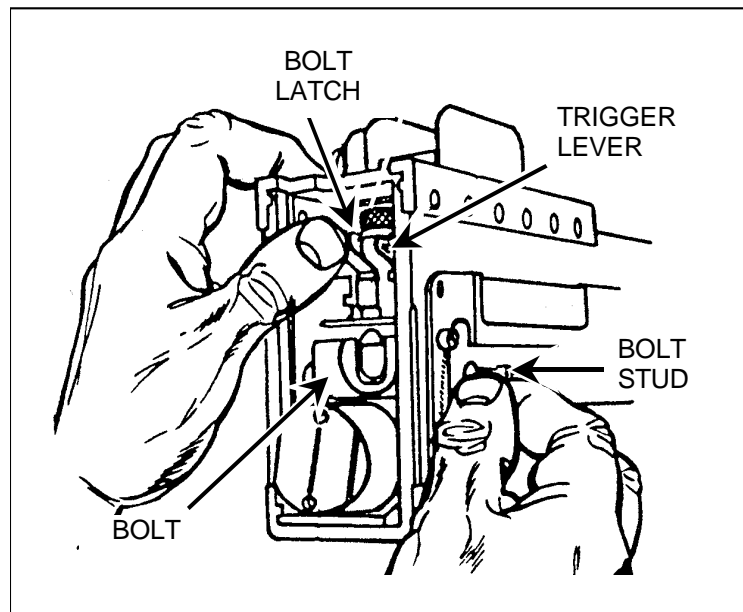
d. Remove the bolt assembly.

(1) Retract the bolt assembly far enough to the rear to align the bolt stud with the bolt stud hole in the right side plate of the receiver ([Figure 6](#)).



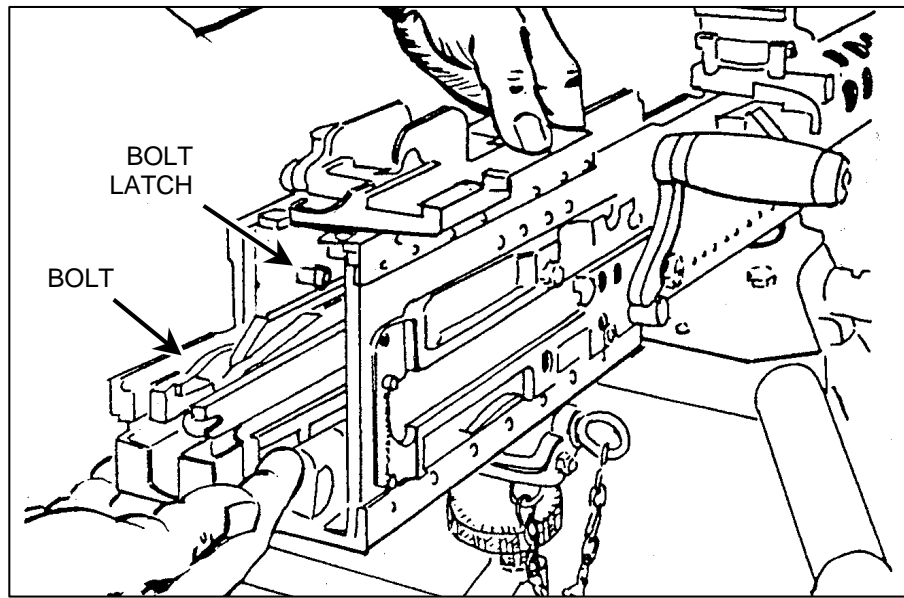
**Figure 6. Removal of the bolt stud.**

(2) If you accidentally move the bolt all the way to the rear, the bolt latch will engage in the bolt latch notches in the top of the bolt. If this occurs, raise the bolt latch and push the bolt forward to align the bolt stud with the clearance hole (Figure 7).



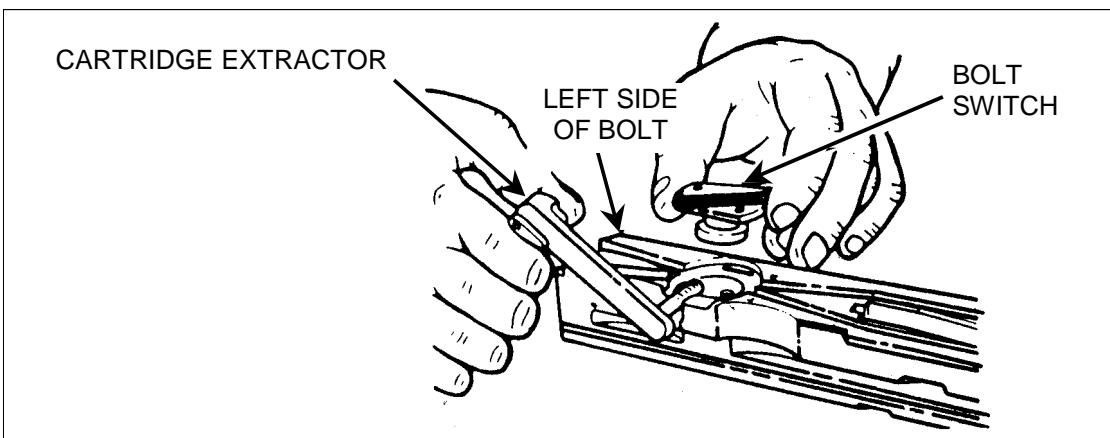
**Figure 7. Unlatching the bolt.**

- (3) Remove the bolt stud.
- (4) Remove the bolt assembly by pulling it from the rear of the receiver (Figure 8).



**Figure 8. Removal of the bolt from the receiver.**

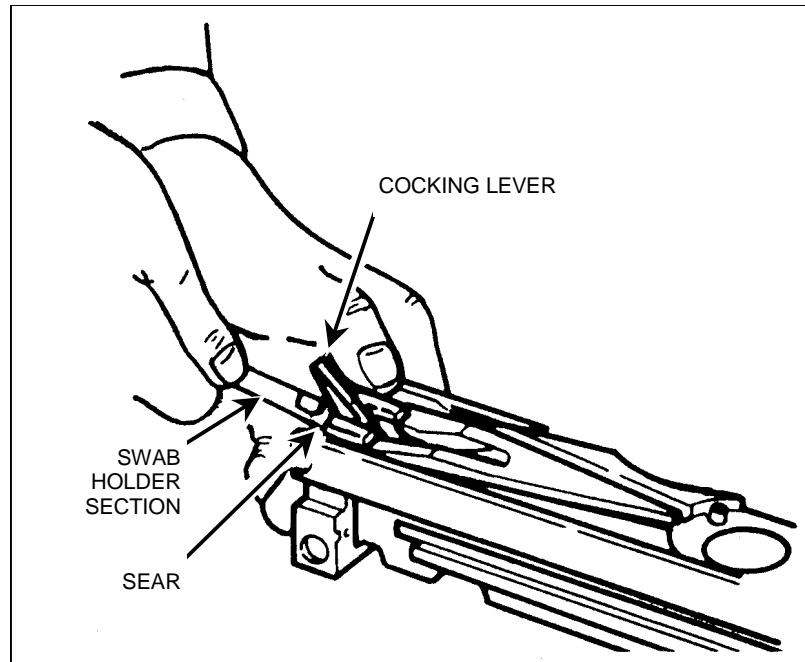
- (5) Disassemble the bolt.
  - (a) Rotate the cartridge extractor upward and remove it from the left side of the bolt ([Figure 9](#)).



**Figure 9. Removal of the cartridge extractor and bolt.**

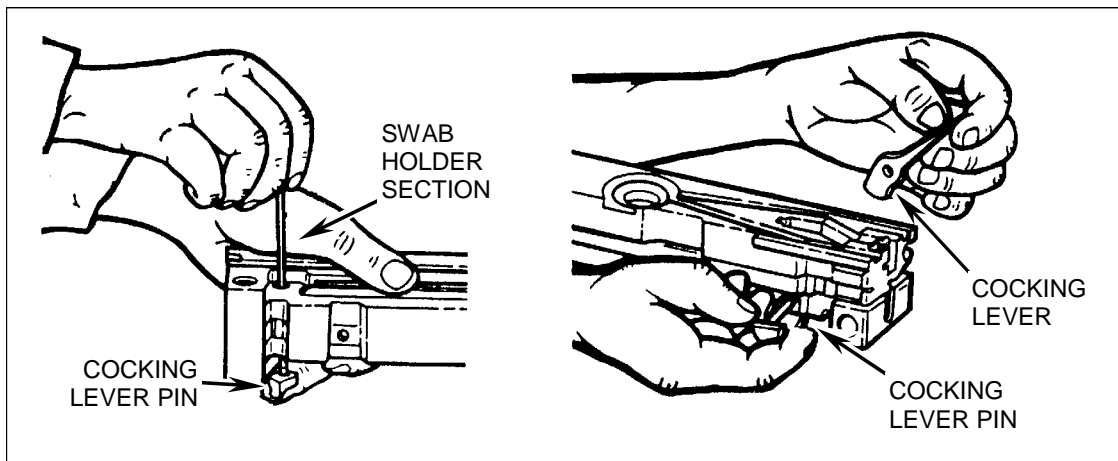
- (b) Remove the bolt switch by lifting it straight up.
    - (c) Place the cocking lever in its rearmost position. Press down on the sear with a swab holder and release the firing pin spring ([Figure 10](#)).





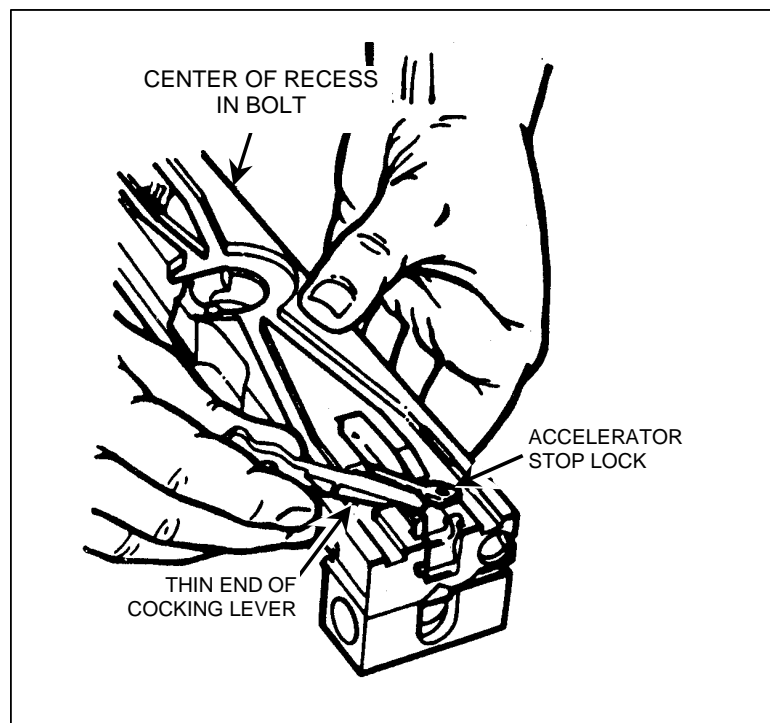
**Figure 10. Releasing the firing pin spring.**

(d) Insert a swab holder section in the hole at the rear of the bolt and push out the cocking lever pin and the cocking lever ([Figure 11](#)).



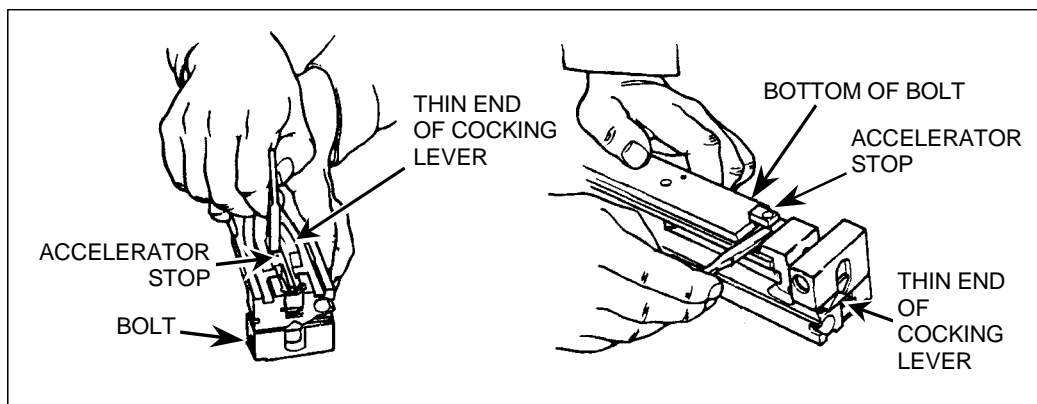
**Figure 11. Removal of the cocking lever pin and cocking lever.**

(e) Use the thin end of cocking lever to rotate the accelerator stop lock to the center of the bolt, then pry up the accelerator stop lock and remove it ([Figure 12](#)).



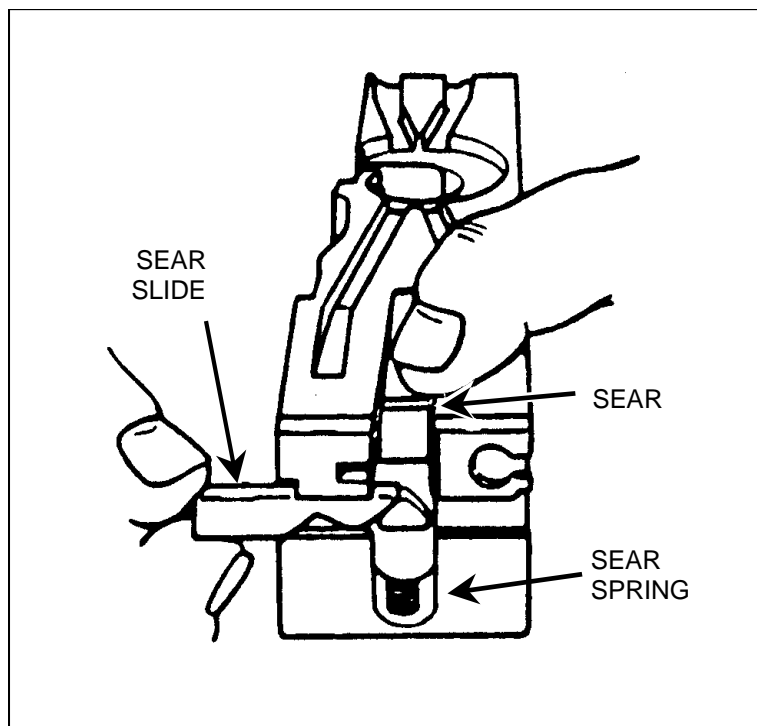
**Figure 12. Removal of the accelerator stop lock.**

(f) Using the thin end of cocking lever, press the accelerator stop from the bolt, turn the bolt over, and pry the accelerator stop from bottom of bolt ([Figure 13](#)).



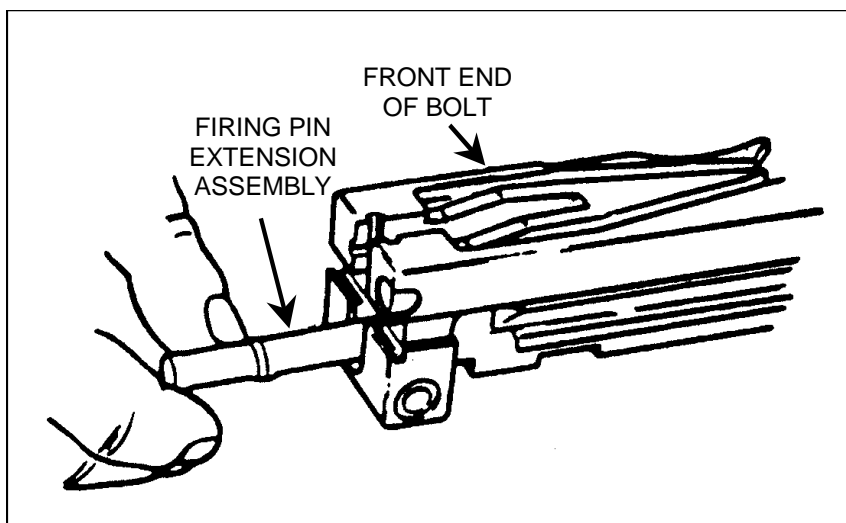
**Figure 13. Removal of the accelerator stop.**

(g) Depress the sear and remove the sear slide, sear, and sear spring ([Figure 14](#)).



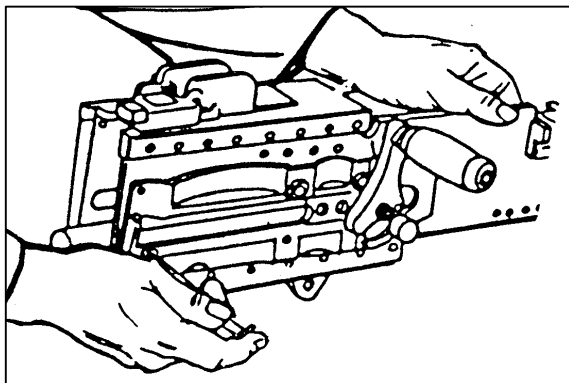
**Figure 14. Removal of the sear slide, sear, and sear spring.**

- (h) Tip the front end of the bolt upward and remove the firing pin extension assembly (Figure 15).
- (i) Remove firing pin from firing pin extension assembly.



**Figure 15. Removal of the firing pin extension assembly.**

- e. Remove the barrel buffer and barrel extension assemblies (Figure 16).

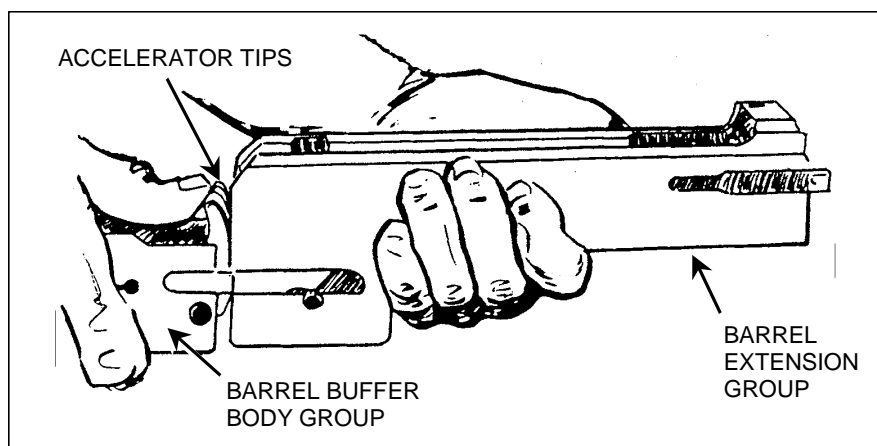


**Figure 16.**  
**Removal of the barrel buffer group and barrel extension group.**

(1) Insert a pointed instrument (you can use the pointed end of the M4 the cleaning rod) in the hole at the lower rear corner of the right side plate. Depress the buffer body lock and, at the same time, place one hand inside the receiver and push the barrel extension and buffer assemblies to the rear until the buffer accelerator is near the rear of the receiver body.

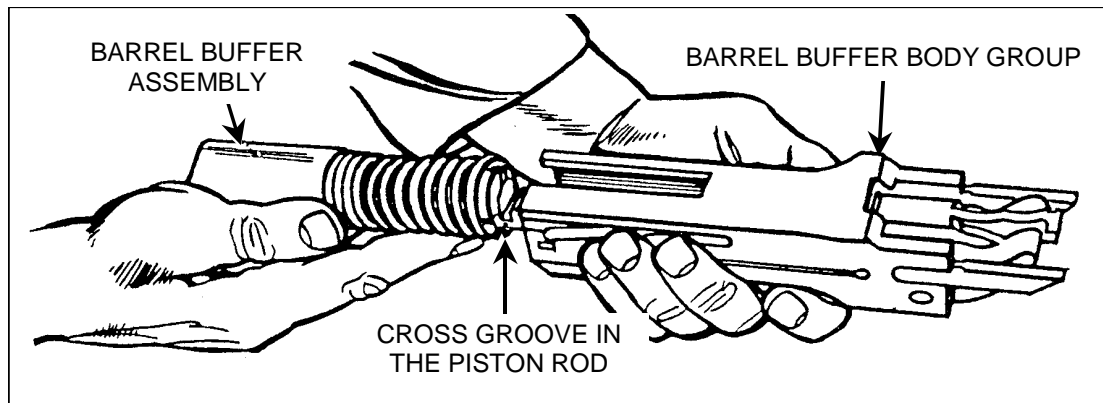
**WARNING**  
**Maintain thumb pressure on the buffer accelerator while removing the barrel buffer and barrel extension assemblies.**

(2) Maintain pressure on the buffer accelerator with your thumb and remove the barrel buffer and barrel extension assemblies from the receiver. Separate them by pushing forward on the accelerator tips (Figure 17).



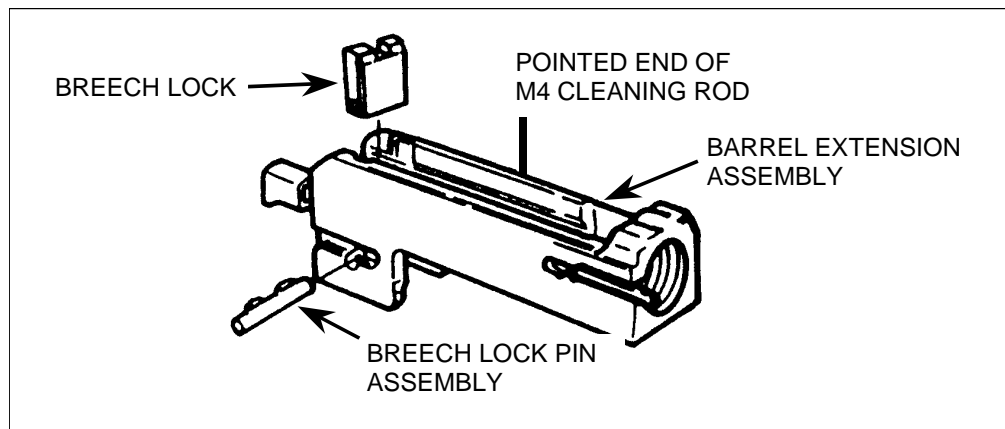
**Figure 17.**  
**Separation of the barrel buffer and barrel extension assemblies.**

- (3) Disassemble the barrel buffer assembly.
  - (a) Remove the buffer assembly by pushing it out the rear of the body of the barrel buffer (Figure 18).



**Figure 18. Removal of the barrel buffer assembly.**

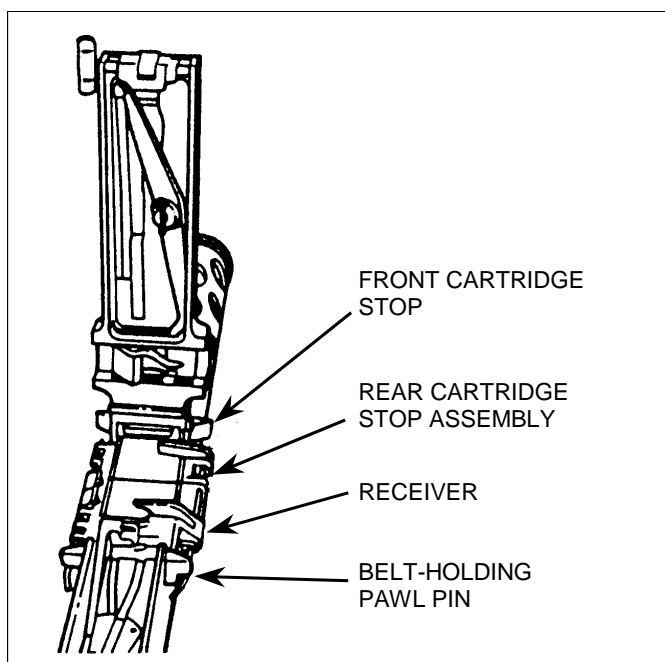
- (b) Using a swab holder, drive the accelerator pin assembly from the barrel buffer body group.
- (c) Remove the buffer accelerator.
- (4) Disassemble barrel extension assembly.
  - (a) Using the pointed end of the M4 cleaning rod, remove breech lock pin assembly (Figure 19).
  - (b) Remove breech lock.



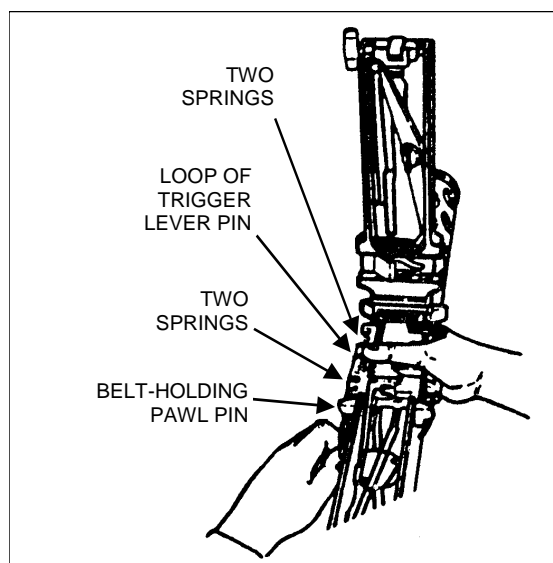
**Figure 19.  
Removal of the breech lock pin assembly and breech lock.**

- f. Disassemble receiver assembly.
  - (1) Remove the front cartridge stop and rear cartridge stop assembly (Figure 20).
  - (2) Press down on belt holding pawl assembly to prevent loss of springs and remove the belt holding pawl pin. Remove belt holding pawl assembly and springs (Figure 21).

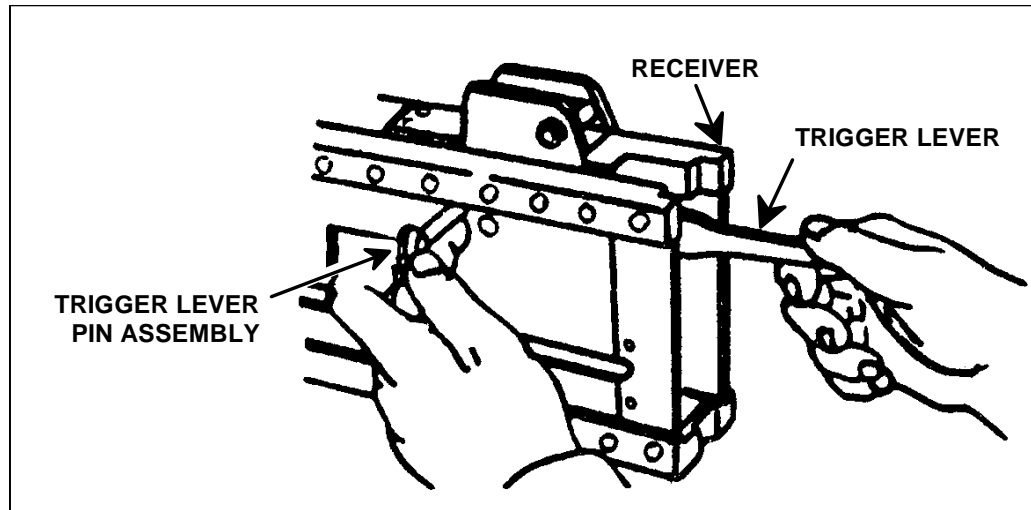
(3) Raise the loop of the trigger lever pin and rotate it into a vertical position. Reach inside the receiver, grasp the trigger lever, and remove the trigger pin assembly and trigger lever ([Figure 22](#)).



**Figure 20.**  
**Removal of the cartridge stop assemblies.**



**Figure 21.**  
**Removal of the belt holding pawl pin, assembly, and springs.**



**Figure 22. Removal of the trigger lever pin assembly and trigger lever.**

3. Clean the .50 caliber machine gun and components.
  - a. Barrel assembly.
    - (1) Clean the bore. Screw the bore brush into the cleaning rod, dip the bore brush in RBC, and push the cleaning rod through the chamber end of barrel. Unscrew the bore brush from the cleaning rod, remove the cleaning rod from the bore, and screw the bore brush into the cleaning rod. Repeat process until clean.
    - (2) Clean the chamber. Screw the chamber brush into the cleaning rod, dip the chamber brush in RBC, and clean the chamber using a clockwise twisting motion.
    - (3) Insert a cleaning swab in the cleaning rod and swab out the bore from the chamber end and back. Repeat until a swab comes out clean.
    - (4) Wipe outside surfaces of barrel with carbon removing compound.
    - (5) Remove all traces of RBC before lubricating.

**NOTE:** Do not submerge the backplate assembly in any fluid.

- b. Backplate assembly. Use only clean wiping rags to remove foreign matter from backplate.
  - c. Bolt assembly. Clean all parts of bolt assembly with a cleaning swab saturated with carbon removing compound. Clean face of the bolt with a cleaning swab soaked in RBC.
  - d. Clean barrel buffer assembly, barrel extension assembly, and receiver assembly with a cleaning swab saturated with carbon removing compound. Wipe all parts dry with clean wiping rags.
  - e. Clean components.
    - (1) T&E mechanism. Remove foreign matter with a clean dry wiping rag. Use a small arms cleaning brush to clean numbers on the scale.
    - (2) Clean M3 tripod, MK64 gun cradle mount, and pintle with a cleaning swab saturated with carbon removing compound. Wipe all parts dry with clean wiping rags.

- f. Ammunition. Remove foreign matter with a clean dry wiping rag.
4. Inspect for serviceability.
- a. Barrel assembly.
    - (1) Check barrel locking notches for wear.
    - (2) Check barrel for rust.
    - (3) Check the bore for bulges, missing bands, and large pits.
  - b. Backplate assembly.
    - (1) Check guides for burrs and bends.
    - (2) Check backplate latch and backplate lock for proper functioning.
    - (3) Make sure locking pins are in place.
    - (4) Check trigger and bolt latch release for proper functioning.
    - (5) Make sure handle grips do not move freely and are not cracked.
  - c. Driving rod assembly.
    - (1) Check for flat spots on springs.
    - (2) Make sure springs operate freely and rod and pin are not bent.
  - d. Bolt assembly.
    - (1) Check movement of cartridge extractor in bolt: it should raise and lower without binding. Check movement of cartridge ejector.
    - (2) Check bolt switch, cocking lever pin, cocking lever, accelerator stop lock, accelerator stop, and sear slide for cracks, bends, and burrs.
    - (3) Inspect sear for cracks and burrs. Inspect sear notch for wear, chips, and burrs. Inspect sear spring for breaks and lack of tension.
    - (4) Inspect firing pin for cracks and chipped or sharp tip. Tip should be smooth and well rounded.
    - (5) Check firing pin extension for cracks, burrs, and free movement in bolt.
    - (6) Make sure bolt is free of burrs and cracks and firing pin hole is not visually out of round.
  - e. Barrel buffer assembly.
    - (1) Inspect buffer body lock for tension, staking, and retention in barrel buffer body.
    - (2) Inspect buffer accelerator for broken claws or chipped tips.
    - (3) Inspect accelerator pin assembly for broken or missing spring.
    - (4) Inspect buffer spring for cracks or breaks.
    - (5) Inspect breech lock depressors. They must have slight vertical (up and down) movement but should have no lateral (side to side)
  - f. Barrel extension assembly.
    - (1) Make sure barrel extension assembly is not bent and that the bolt guideways are smooth and free of burrs.
    - (2) Inspect threads of barrel extension assembly for damage.
    - (3) Make sure barrel locking spring is staked and fully seated in its groove. Also, make sure the locking end of the spring has good tension and the lug is not damaged.
    - (4) Check breechblock for smooth movement in guideways of barrel extension assembly.
  - g. Receiver and cover assembly.
    - (1) Inspect belt holding pawl brackets for looseness, bends, and cracks.
    - (2) Inspect side plates for bends that would affect movement of any internal parts.

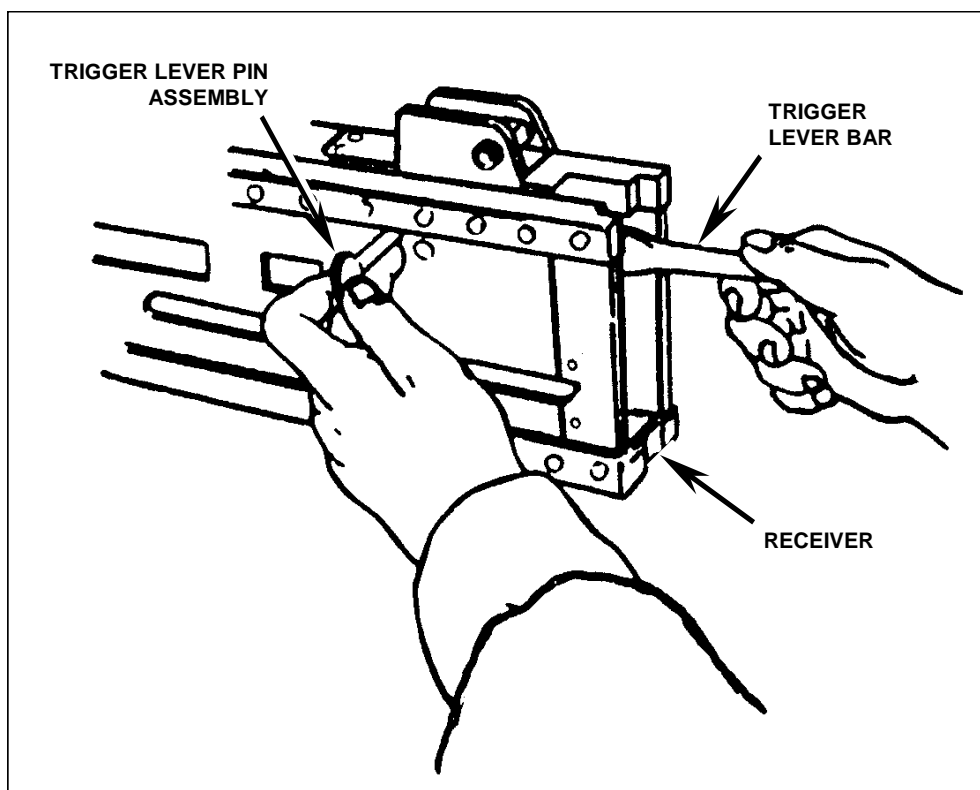


- (3) Check for cracked and burrs at backplate grooves.
  - (4) Check operation of rear sight. Make sure windage and elevation screws function properly, leaf assembly has good spring tension, and sight assembly is secured tightly to receiver.
  - (5) Make sure bolt stop is present and in good condition.
  - (6) Make sure trigger lever moves freely.
  - (7) Make sure trigger lever pin locks in place.
  - (8) Make sure cotter pin is in place on extractor switch.
  - (9) Check retracting slide assembly for visible damage. Check retracting slide handles for smooth movement. Make sure cotter pins are present and in good condition and safety wire is in place and properly laced.
    - h. Inspect components.
      - (1) T&E mechanism.
        - (a) Inspect hand wheels and threads for burrs and rust. Check hand wheels for smooth operation.
        - (b) Make sure traversing slide lock lever has spring action. Make sure elevating mechanism sleeve fits on traversing bar and clamps firmly.
        - (c) Check traversing and elevating scales for legibility.
        - (d) Inspect quick release pin and chain for burrs and rust. Check quick release pin for presence of spring loaded balls.
      - (2) M3 tripod.
        - (a) Check for completeness of tripod. Make sure all nuts and bolts are tightly secured.
        - (b) Check for visible cracks on legs and tripod head.
        - (c) Check for missing, broken, or inoperative sleeve lock latch.
        - (d) Check pintle lock assembly. Check surfaces of pintle, bolt, and nut for burrs and rust. Make sure cotter pin is present and in good condition.
        - (e) Check locking action of front leg clamping assembly.
        - (f) Check that rear legs lock in the open position. Make sure sleeve latch notch and right leg slide notch engage completely. Make sure latch spring has good tension.
        - (g) Check telescoping, indexing, and locking action of rear legs and front leg clamping assembly.
      - (3) MK64 gun cradle mount.
        - (a) Check for missing or damaged parts.
        - (b) Check for rust, cracks, and burrs.
        - (c) Check pintle lock assembly. Check surfaces of pintle, bolt, and nut for burrs and rust. Make sure cotter pin is present and in good condition.
    - i. Inspect ammunition. Check for damage or corroded rounds.
5. Lubricate the .50 caliber machine gun.
- a. Remove all traces of RBC or carbon removing compound.

**CAUTION**

Do not mix lubricants on the same weapon. The weapon must be thoroughly cleaned with dry cleaning solvent during change from one lubricant to another.

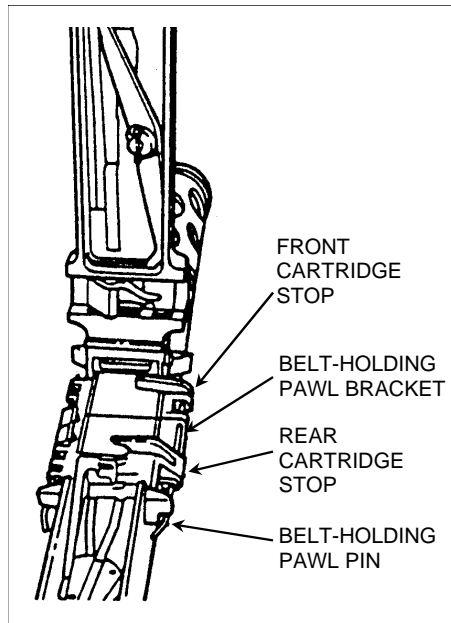
- b. Lubricate exterior of backplate with a light coat of oil. Do not lubricate interior of backplate.
  - c. Lubricate all other parts with a light coat of LSA or CLP (at temperatures above 0° Fahrenheit) or LAW (at temperatures below 0° Fahrenheit).
6. Assemble the .50 caliber machine gun.
- a. Assemble the trigger lever ([Figure 23](#)).
    - (1) Place the trigger lever bar in the receiver directly under the timing nut so that the hole in the trigger lever bar is aligned with the mounting hole in the receiver.
    - (2) Insert trigger lever pin assembly (loop end vertical) in the assembly hole on left side of receiver. Match key on trigger lever pin with keyway in side plate of receiver and install the pin completely.
    - (3) Rotate trigger pin lever assembly 90 degrees and lock in place. Fold the loop end down.



**Figure 23. Assembly of the trigger lever.**

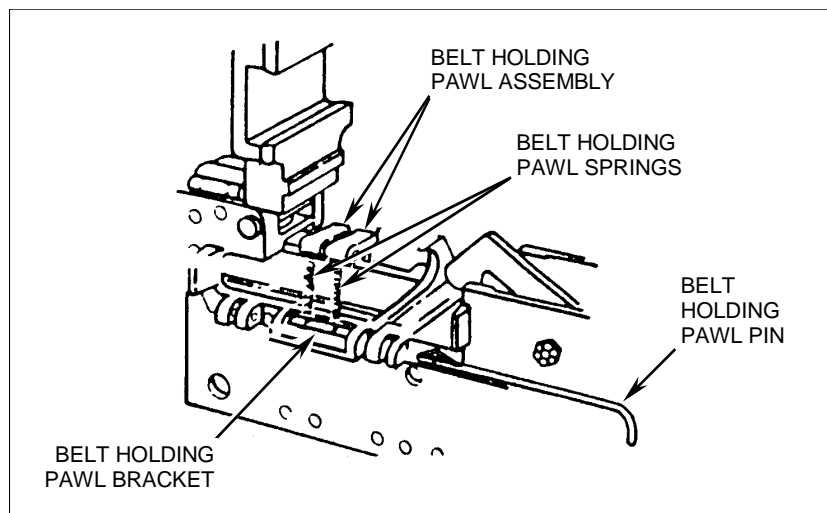
- b. Assemble receiver group.

(1) Determine the direction of feed. [Figure 24](#) shows left hand feed. Place the right-hand rear cartridge stop assembly and front cartridge stop on the belt holding pawl bracket.



**Figure 24. Installation of the rear cartridge stop assembly and front cartridge stop.**

- (2) Install belt holding pawl pin with hooked end to rear.
- (3) Seat belt holding pawl springs in place on the belt holding pawl bracket.
- (4) Place belt holding pawl assembly on the springs. Compress springs and insert belt holding pawl pin ([Figure 25](#)).

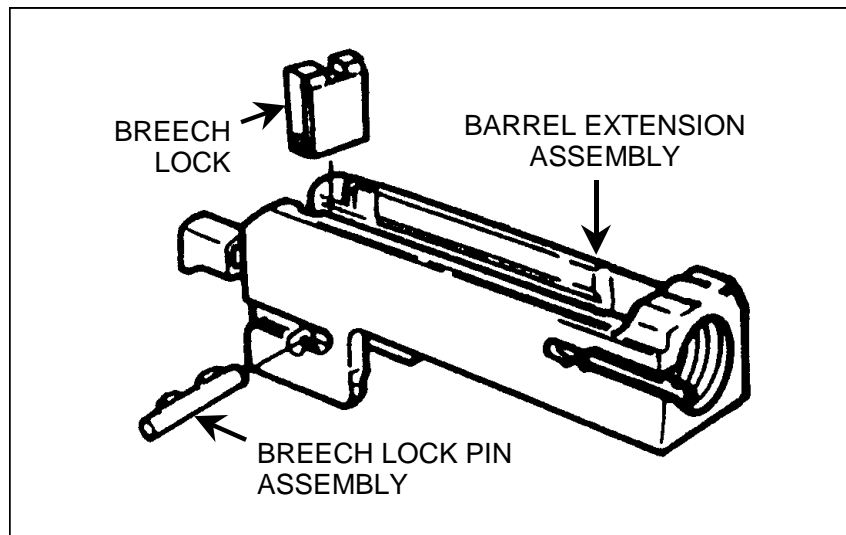


**Figure 25. Installation of the belt holding pawl assembly.**

c. Assemble barrel extension (Figure 26).

(1) Install breechblock lock with beveled edge up and to the front of barrel extension assembly.

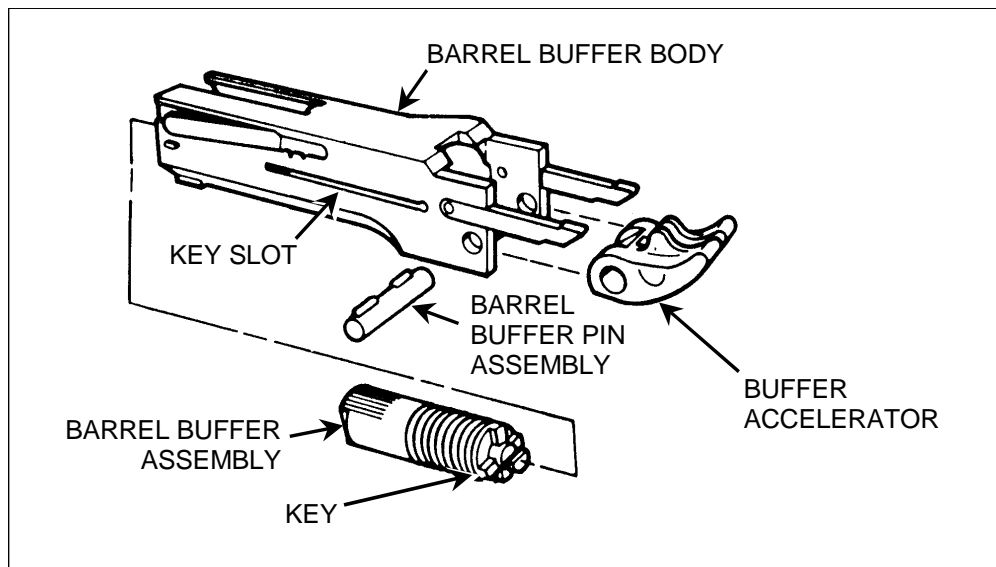
(2) Install breech lock pin assembly in barrel extension. Make sure both ends of breech lock pin assembly are flush with sides of barrel extension assembly.



**Figure 26. Assembly of the barrel extension assembly.**

d. Assemble barrel buffer assembly.

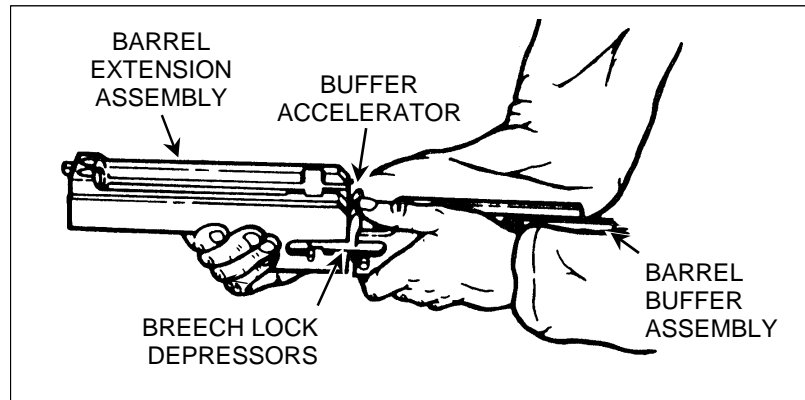
(1) Place buffer accelerator (tips up) into barrel buffer body, align mounting holes, and install buffer pin assembly. Ensure both ends of barrel buffer pin assembly are flush with sides of barrel buffer body (Figure 27).



**Figure 27. Assembly of the barrel buffer assembly.**

(2) Align key on barrel buffer assembly with key slot in barrel buffer body and slide barrel buffer assembly into barrel buffer body.

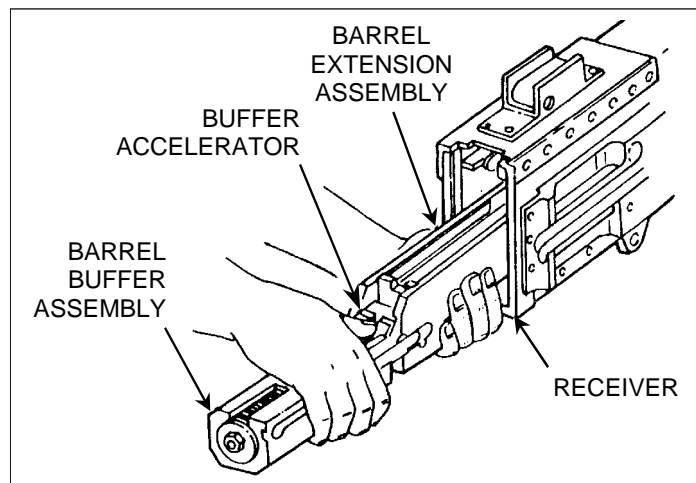
(3) Hold the barrel buffer assembly with the buffer accelerator up and engage the notch on the shank of the barrel extension assembly with the cross groove in the piston rod of the barrel assembly (Figure 28).



**Figure 28. Attachment of the barrel buffer and barrel extension assemblies.**

(4) Align breech lock depressors in grooves of barrel extension assembly and push barrel buffer assembly forward.

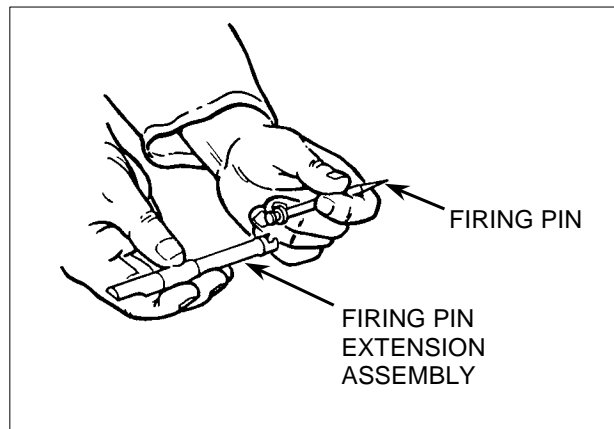
(5) Install barrel buffer assembly and barrel extension assembly in receiver (Figure 29).



**Figure 29. Installation of the barrel buffer and barrel extension assemblies.**

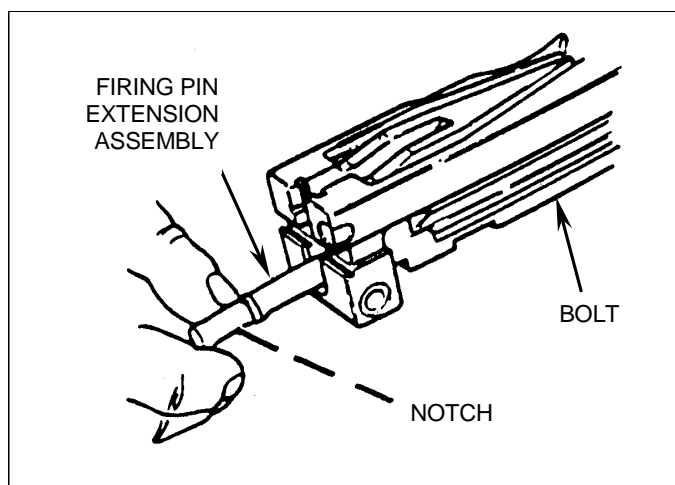
e. Assemble bolt assembly.

(1) Attach firing pin to firing pin extension assembly (Figure 30).



**Figure 30. Attachment of the firing pin to the firing pin extension assembly.**

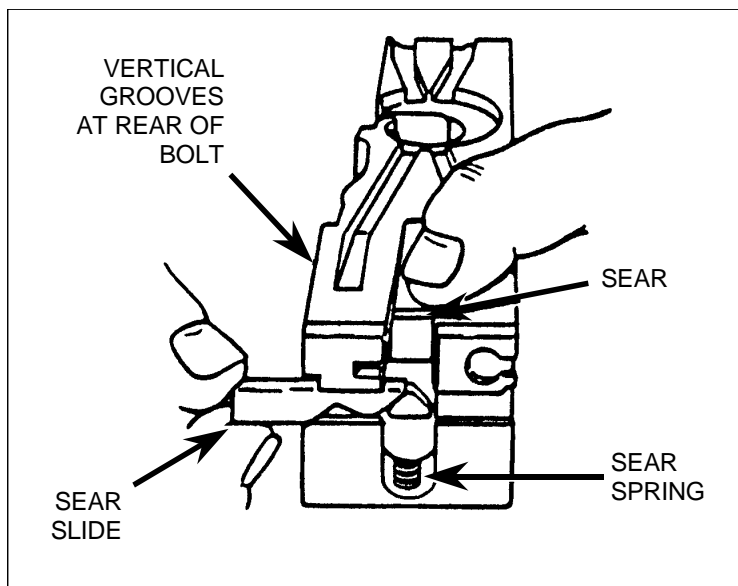
(2) Insert firing pin extension assembly into bolt with notch of firing pin extension assembly down ([Figure 31](#)).



**Figure 31.  
Installation of the firing pin extension assembly.**

(3) Slide firing pin extension assembly forward so that tip of firing pin protrudes from face of bolt.

(4) Place sear spring in recess on bolt. Slide sear down into vertical grooves at rear of bolt with wedge-shaped lug pointed outward and upward ([Figure 32](#)).

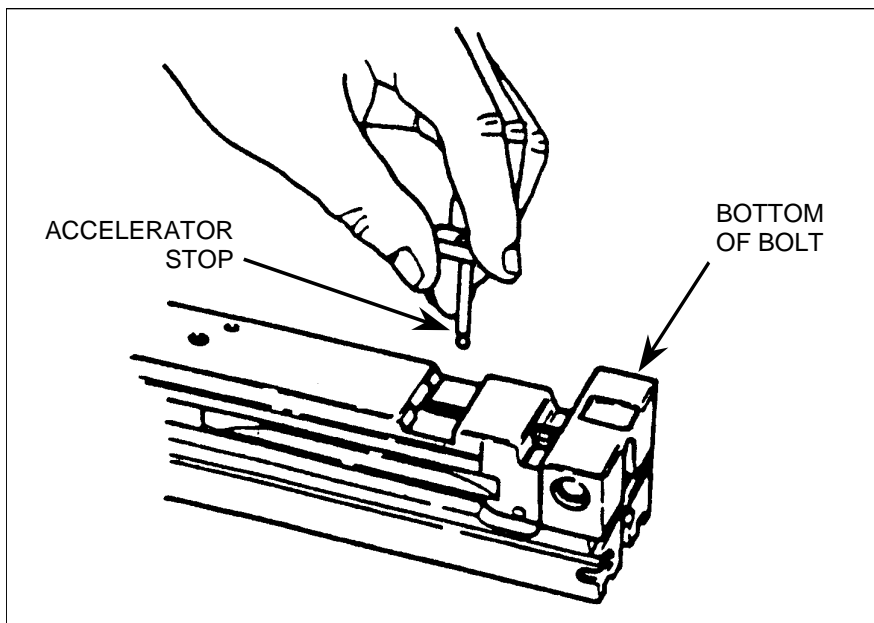


**Figure 32. Installation of the sear slide.**

(5) Compress sear spring by pressing down on the sear. Install sear slide from left side of bolt in grooves of bolt with “V” notch down.

**NOTE:** Make sure the pin end of the accelerator is installed behind the firing pin spring, not through a coil.

(6) Insert pin end of accelerator stop through bottom of bolt ([Figure 33](#)).

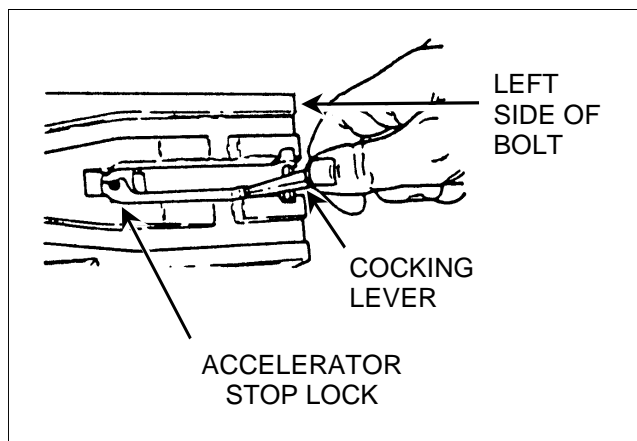


**Figure 33. Attachment of the accelerator stop.**

**NOTE:** Base end of accelerator stop should be installed with long end forward so beveled edges match.

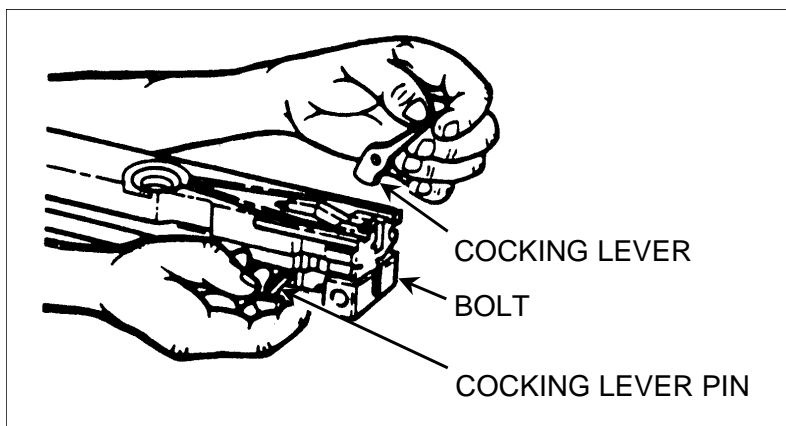
(7) Turn bolt over. Place forked end of accelerator stop lock on notched end of accelerator stop.

(8) Using the wedge-shaped end of the cocking lever, press down on the flat end of the accelerator stop lock, and move the cocking lever into the groove on the left side of the bolt ([Figure 34](#)).



**Figure 34. Attachment of the accelerator stop lock.**

(9) Insert cocking lever, with rounded nose on lower end of lever to rear, into slot in top of bolt ([Figure 35](#)).



**Figure 35. Attachment of the cocking lever.**

(10) Align the hole in the cocking lever with the holes in the bolt. Insert the cocking lever pin from the left side.

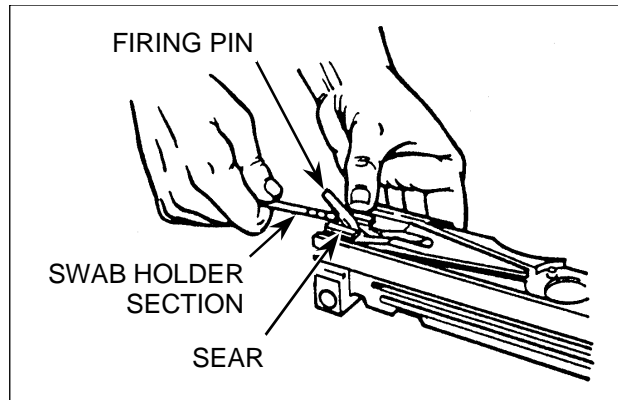
(11) Push the cocking lever forward to charge the firing pin. Return the cocking lever to the rearward position.



**WARNING**

**Do not try to release the firing pin with the cocking lever forward. The cocking lever could spring back forcibly and cause serious injury.**

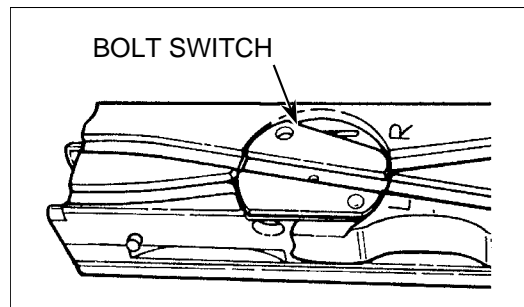
(12) Test firing pin release. Trip the firing pin by depressing the top of the sear with a section of a swab-holder. If doing so makes a sharp metallic sound, then the firing pin spring is in good condition ([Figure 36](#)).



**Figure 36. Testing the firing pin release.**

(13) Place cocking lever in forward position. Determine the direction of feed before installing the bolt switch. Figure shows left-hand feed.

(14) Place bolt switch in position so that the feed groove is continuous for feed direction indicated ([Figure 37](#)).



**Figure 37. Setting the bolt switch.**

(15) Hold cartridge extractor in vertical position and insert shank end of cartridge extractor into left side of bolt. Make sure cartridge extractor fits into bolt as far as possible.

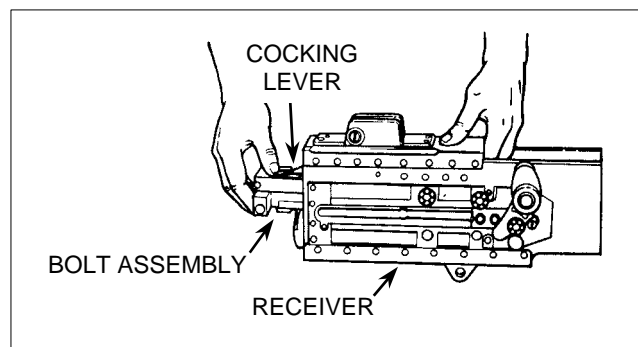
(16) Rotate cartridge extractor downward to full horizontal position. Check that flange on bottom of cartridge extractor has engaged shoulder on bolt.

**CAUTION**

Avoid tripping the buffer accelerator while installing the bolt assembly.

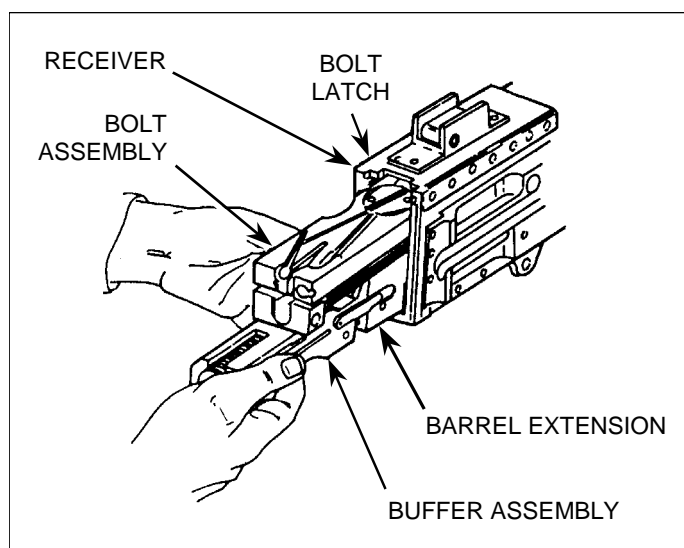
(17) Ensure cocking lever is forward.

(18) Push bolt assembly forward into receiver until bolt latch engages notches in top of bolt assembly ([Figure 38](#)).



**Figure 38. Installation of the bolt assembly.**

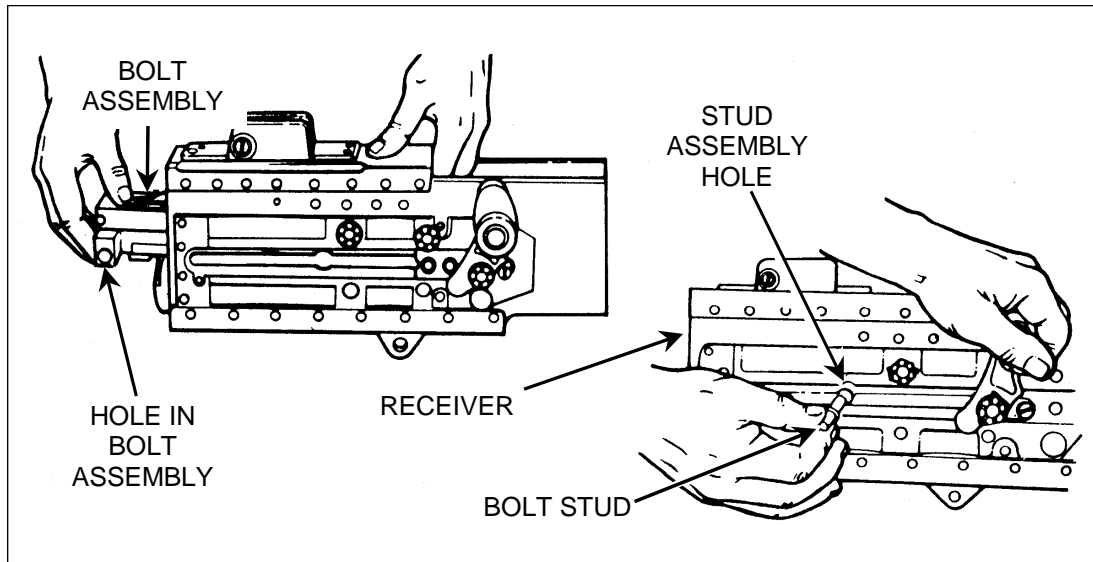
(19) If you cannot install the bolt this way, remove the barrel extension and buffer assembly from the receiver. Install the bolt assembly into the barrel extension and buffer assembly, then install them in the receiver ([Figure 39](#)).



**Figure 39. Installation of the bolt assembly within the barrel extension and buffer assembly.**

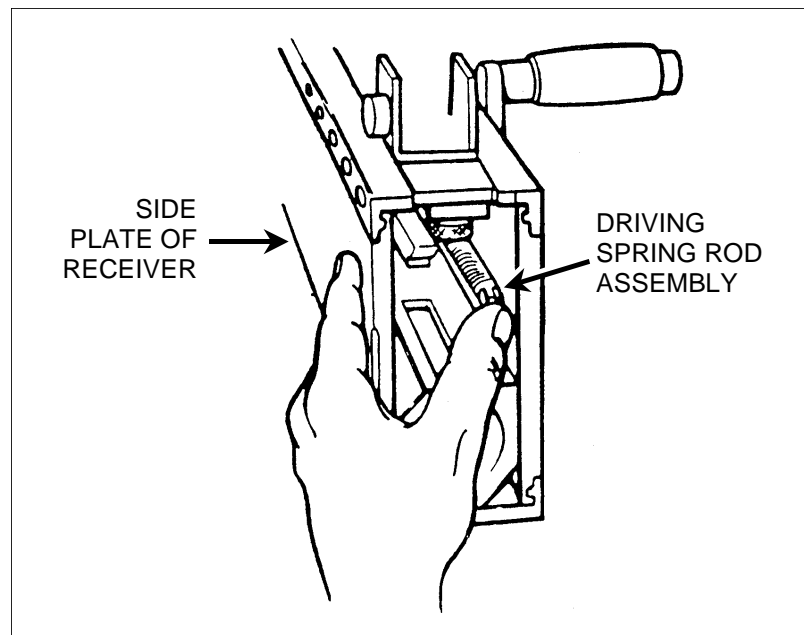
(20) Raise bolt latch and push bolt assembly into the receiver.

(21) Align holes in bolt assembly with stud assembly hole in receiver and install bolt stud in hole in bolt assembly. Place bolt in forward position ([Figure 40](#)).



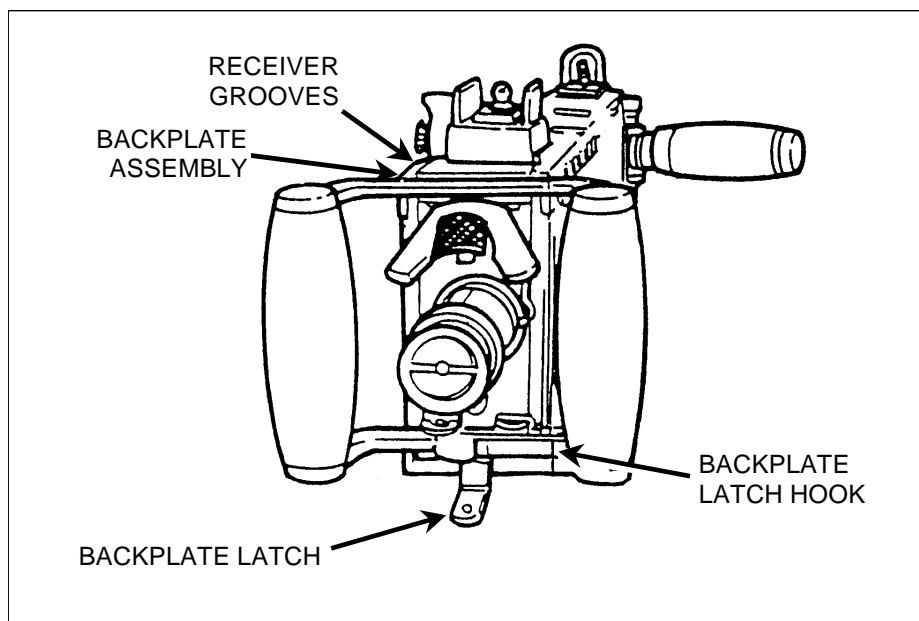
**Figure 40. Installation of the bolt assembly.**

f. Assemble driving spring rod assembly ([Figure 41](#)). Install the driving spring rod assembly in the upper right corner of the bolt. Push forward and to the right until the driving spring rod assembly engages in the hole in the side plate of the receiver—not in the groove for the backplate.



**Figure 41. Installation of the driving spring rod assembly.**

- g. Install backplate assembly (Figure 42).



**Figure 42. Installation of the backplate assembly.**

- (1) Align backplate assembly with receiver grooves. Pull backplate latch lock while lifting up on backplate latch. Lower backplate assembly down until engaged in receiver.
- (2) Test proper locking by pulling up on backplate assembly.
- h. Assemble barrel assembly.
  - (1) Retract bolt far enough for barrel locking spring lug to center in barrel locking spring hole on right side of receiver.
  - (2) Place the smallest loop of a caliber .50 link between the trunnion block and the barrel extension. This holds the barrel locking spring lug aligned with the 3/8-inch hole.
  - (3) Install and screw barrel assembly completely into receiver. Unscrew barrel assembly two clicks and check headspace.
7. Perform a function check to make sure weapon is assembled correctly.
  - a. Place the weapon in the single-shot mode.
  - b. Open the cover and pull the retracting slide handle to the rear. Bolt should lock to rear in single shot mode.
  - c. Hold the retracting slide handle to the rear; depress bolt latch release and ease the bolt forward.
  - d. Press trigger; weapon should fire.
  - e. Place the weapon in the automatic-fire mode.
  - f. Pull the retracting slide handle to the rear and hold. Bolt should not lock to rear in automatic-fire mode.
  - g. Release pressure on the retracting slide handle and ease the bolt forward.
  - h. Press trigger; weapon should fire.

## EVALUATION PREPARATION

*Setup:* At the test site, provide the soldier with equipment listed in conditions. Use performance steps in the training outline to evaluate soldier's performance of the task.

*Brief Soldier:* Tell the soldier that he must clear, disassemble, clean, inspect, lubricate, assemble, and perform a function check on the weapon.

## EVALUATION GUIDE

Performance Measures	Results	
1. Clear the weapon.	P	F
2. Disassemble the weapon without damaging any parts.	P	F
3. Clean the weapon, components, and ammunition.	P	F
4. Identify any damaged, worn, or malfunctioning part.	P	F
5. Lubricate weapon using the correct lubrication technique.	P	F
6. Assemble weapon in correct sequence without damaging any parts.	P	F
7. Perform a function check.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
FM 23-65	None
TM 9-1005-213-10	

## LOAD A CALIBER .50 M2 MACHINE GUN 071-022-0003

### CONDITIONS

Given a cleared caliber .50 machine gun, mounted on a tripod or cupola, and linked caliber .50 ammunition.

### STANDARDS

Load the linked ammunition in the feed tray groove so that, when the cover is closed, a round remains in the tray groove and the ammunition will feed correctly.

### EVALUATION PREPARATION

*Setup:* Provide the soldier with equipment and materials listed in the conditions. You can evaluate this task in a classroom or training area using dummy linked caliber .50 ammunition.

*Brief Soldier:* Tell the soldier to load the weapon using the belt of ammunition.

### EVALUATION GUIDE

Performance Measures	Results	
1. Ensure the bolt is forward and the cover is closed.	P	F
2. Insert the double-loop end of the belt into the feedway until the belt-holding pawl is holding holds the first round.	P	F
3. Pull the retracting slide handle to the rear and release it. If the bolt latch release is up, return the retracting slide handle to the forward position, then release the bolt.	P	F
4. Pull the retracting slide handle to the rear a second time and release it. When the bolt goes forward the second time, the gun is loaded.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

FM 23-65

TM 9-1005-213-10

**Related**

None

## SET HEADSPACE AND TIMING ON A CALIBER .50 M2 MACHINE GUN 071-313-3455

### CONDITIONS

Given a caliber .50 machine gun (tripod or cupola mounted), a headspace and timing gauge, and an assistant gunner.

### STANDARDS

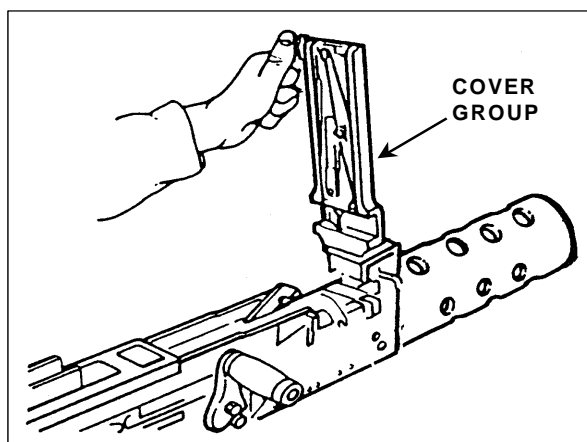
Adjust headspace so that the GO end of the headspace gauge will enter the T-slot and the NO GO end will not. Set timing for the weapon to fire when recoiling parts are between 0.020 and 0.116 inch out of battery.

### TRAINING AND EVALUATION Training Information Outline

#### **WARNING**

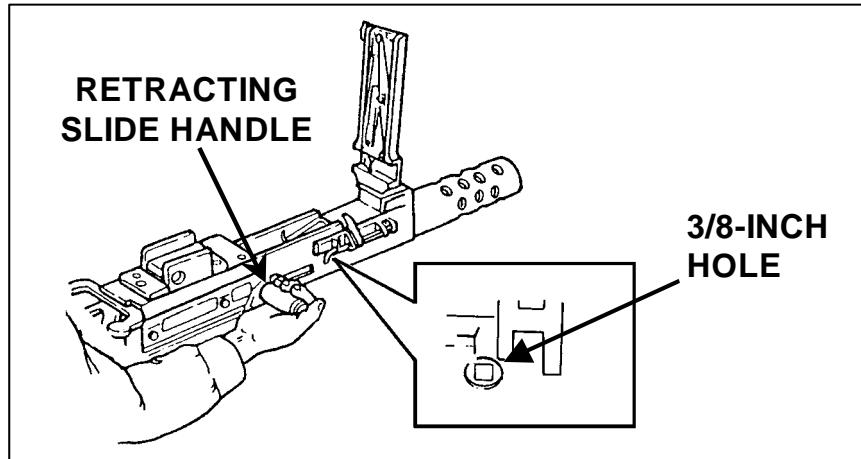
**Make sure the gun is clear of ammunition before starting.**

1. Adjust headspace.
  - a. Raise the cover group all the way up (Figure 1).
  - b. Grasp the retracting slide handle with your right hand, palm up; pull the bolt to the rear until the barrel locking spring lug aligns with the 3/8-inch hole in the right side plate of the receiver (Figure 2).



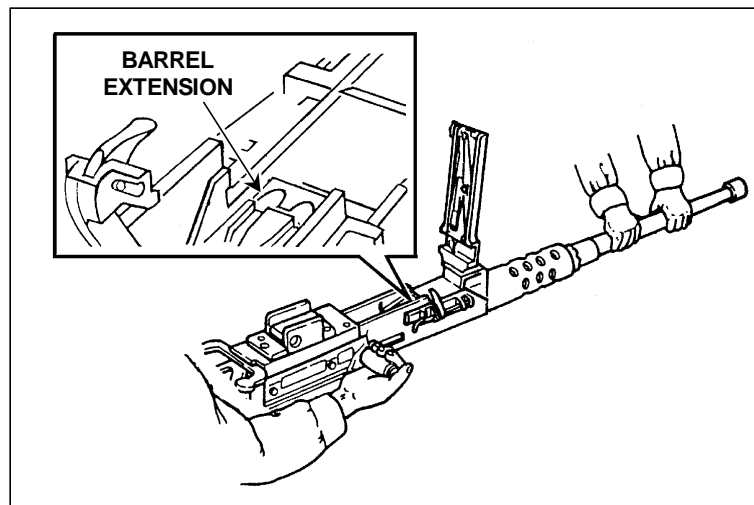
**Figure 1. Raising the cover group.**





**Figure 2. Retracting the bolt.**

c. Screw the barrel fully into the barrel extension; then unscrew the barrel two notches (clicks) (Figure 3).



**Figure 3. Screwing the barrel into the barrel extension.**

d. Release the retracting slide handle and allow the bolt to go forward slowly.

**WARNING**

- Check the barrel to make sure it is locked in the forward position. Try to turn the barrel in either direction. The barrel should not turn. If it does, stop and notify your supervisor or unit armorer at once.
- DO NOT try to fire the gun.

e. Make sure the weapon is in single-shot mode. Pull the bolt to the rear and hold it; then press the bolt-latch release, and allow the bolt to go forward slowly. Do not fire the weapon.

f. Pull the retracting slide handle back, until the barrel extension separates (not more than 1/16 of an inch) from the trunnion block. Make sure the GO/NO GO gauge (Figure 4) has no broken, bent, rusted, or pitted areas, or other defects that could affect the weapon's dimensional tolerances.

g. Raise the cartridge extractor. Try to insert each end of the GO/NO GO headspace gauge in the T-slot between the face of the bolt and the rear of the barrel (Figure 5).

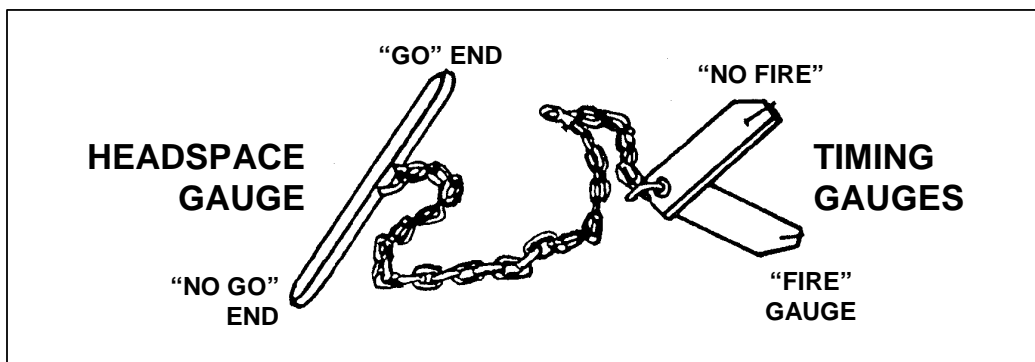


Figure 4. Headspace and timing gauge.

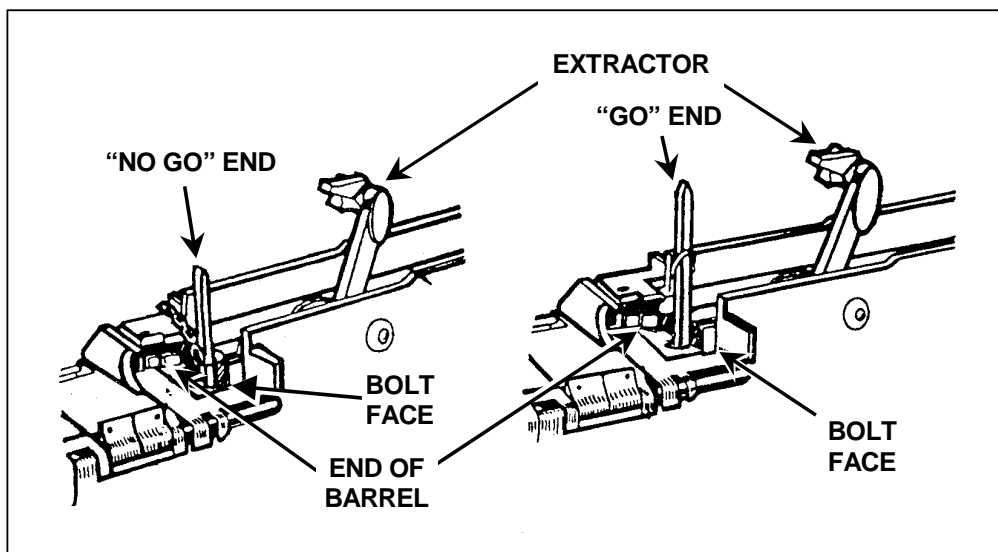


Figure 5. Checking headspace.

(1) If the GO end of the gauge enters freely up to the ring on the center of the gauge, and the NO/GO end will not enter, the headspace is set correctly.

(2) If the GO end of the gauge will not enter T-slot freely, adjust headspace as follows:

(a) Retract the bolt so you can see the barrel-locking lug spring in the center of the receiver hole on the right side of the receiver ([Figure 2](#)).

(b) Unscrew the barrel from the barrel extension one notch (click) at a time, until the GO end of the gauge enters the T-slot freely (check after each click). To complete the adjustment, try to insert the NO GO end of the gauge. If it will not enter the T-slot, the headspace is set correctly.

(3) If the NO GO end of the gauge enters the T-slot, adjust as follows:

(a) Retract the bolt so you can see the barrel locking lug spring in center of receiver hole on right side of receiver ([Figure 2](#)).

(b) Screw the barrel into the barrel extension one notch (click) at a time, until the NO GO end of the gauge will not enter the T-slot (check after each click). To complete the adjustment, try to insert the GO end of the gauge. If it inserts into the T-slot easily, the headspace is set correctly.

#### CAUTION

- After you have corrected the headspace, recheck the barrel's positive locking action by trying to screw it in or out with the bolt in the forward position. If you can do either, then DO NOT fire the machine gun.
- Notify your supervisor or the unit armorer.

## 2. Check and adjust timing.

### a. Check timing.

(1) Make sure you have set the headspace correctly.

(2) Pull the bolt to the rear with the retracting slide to cock the machine gun. While holding the handle to the rear, depress the bolt latch release, and allow the bolt to go forward slowly. Do not press the trigger.

(3) Retract the bolt just enough (1/16 inch) to insert the NO-FIRE gauge between the barrel extension and trunnion block, with the beveled edge of the gauge against the notches in the barrel. Release the retracting slide handle slowly ([Figure 6](#)).

(4) Depress the trigger. The gun should not fire. If it does not, continue the timing check. However, if it does fire, go to [Task Step 2b](#).

(5) Grasp the retracting slide handle. Retract the bolt just enough (1/16 inch) to remove the NO-FIRE gauge. Insert the FIRE gauge between the barrel extension and trunnion block, with the beveled edge of the gauge against the notches in the barrel ([Figure 7](#)). Release the retracting slide handle slowly.

(6) Depress the trigger. The gun should fire. If it does not, go to [Task Step 2b](#).

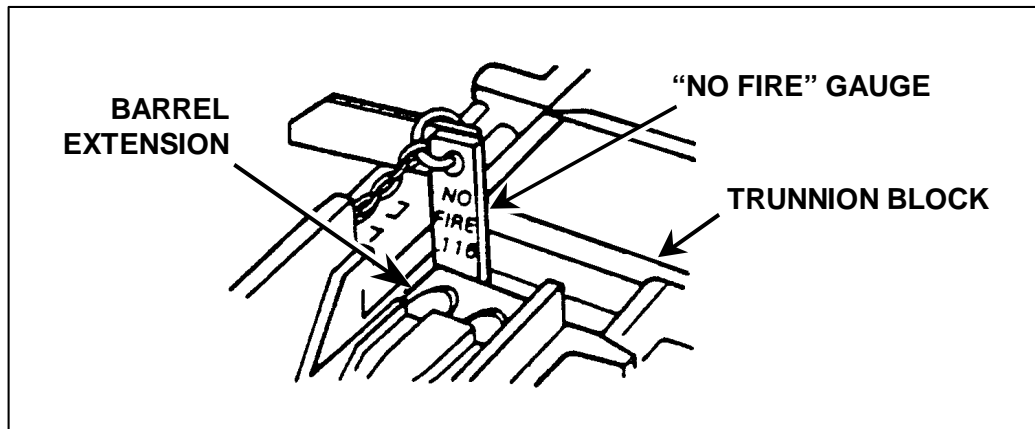


Figure 6. Insertion of the NO-FIRE gauge.

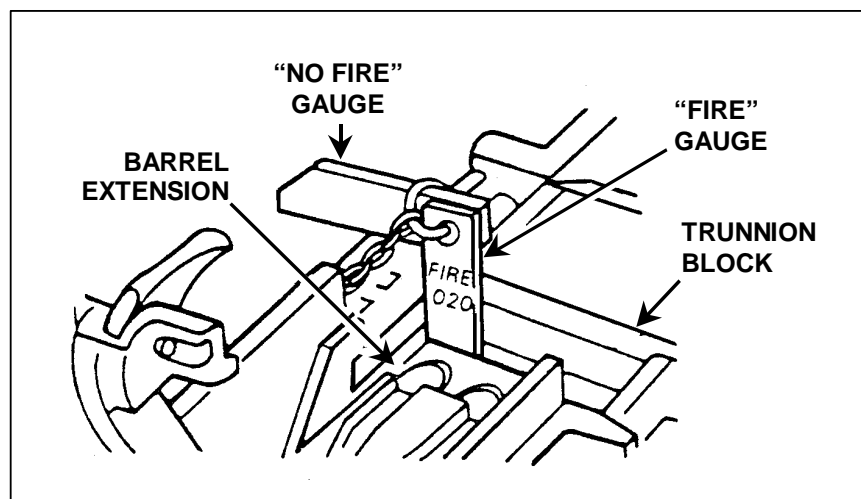


Figure 7. Insertion of the FIRE gauge.

b. Adjust timing.

(1) Remove the gauge.

(2) Pull the bolt to the rear with the retracting slide to cock machine gun. Press the bolt latch release, and allow the bolt to go forward slowly. Do not press the trigger.

(3) Grasp the retracting slide handle. Retract the bolt just enough to insert the FIRE gauge between the barrel extension and the trunnion block, with the beveled edge of the gauge against the notches in the barrel (Figure 7).

**WARNING**

- **DO NOT** remove the backplate unless the bolt is in the forward position.
- **Never** cock the gun with the backplate off.
- **Stand to one side of the weapon** when removing the backplate to avoid possible injury from the driving spring rod.

- (4) Move to the side of the gun and remove the backplate.
- (5) Screw the timing adjustment nut all the way down (to the left). The nut should turn hard (Figure 8).
- (6) Try to fire by pushing firmly up on the trigger lever (Figure 9). The gun should not fire.

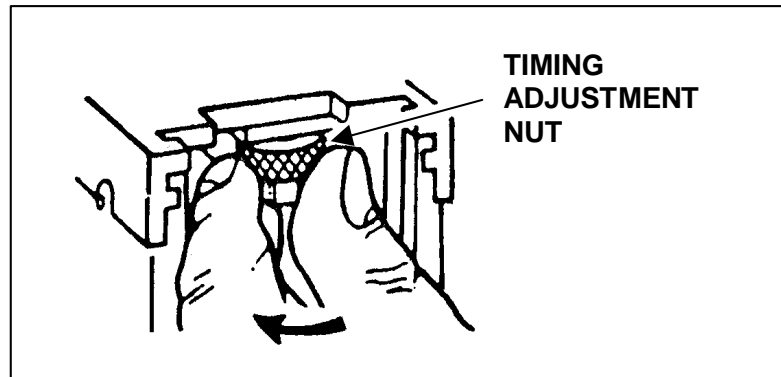


Figure 8. Timing adjustment nut.

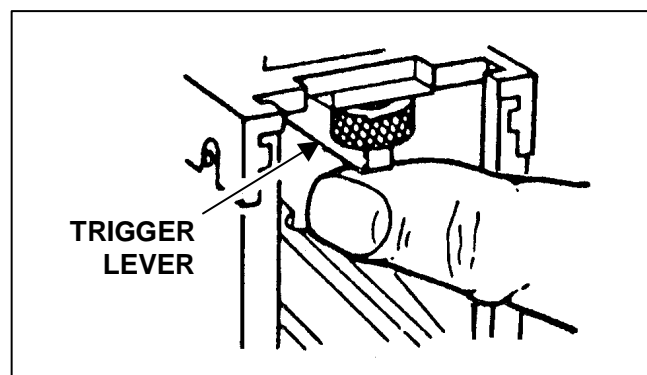


Figure 9. Trigger lever.

- (7) Screw the timing adjustment nut up (to the right), one click at a time. Push up firmly on the trigger lever after each click. Repeat until the gun fires.

(8) Turn the timing adjustment nut up (to the right), two more clicks. Do not turn the timing adjustment nut any more.

(9) Remove the FIRE gauge, and replace the backplate.

(10) Recheck timing with the FIRE/NO-FIRE gauge twice more to confirm that the adjustment is correct.

### EVALUATION PREPARATION

*Setup:* At the test site, provide the equipment listed in the task conditions statement. Use the performance steps in the training information outline to evaluate performance of the task.

*Brief Soldier:* Tell the soldier to check for and set the correct headspace and timing on the gun.

### EVALUATION GUIDE

#### Performance Measures

#### Results

1. Adjust headspace.

P      F

2. Check and set timing.

P      F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

#### Required

FM 23-65

TM 9-1005-213-10

#### Related

None

## ENGAGE TARGETS WITH A CALIBER .50 M2 MACHINE GUN 071-313-3454

### CONDITIONS

Given a zeroed caliber .50 machine gun (tripod or cupola mounted), linked caliber .50 ammunition, and a sector of fire with engageable targets.

### STANDARDS

Fire the caliber .50 machine gun to engage targets in your assigned sector of fire. Apply the correct target-engagement techniques so that the entire target is covered with fire.

### TRAINING AND EVALUATION Training Information Outline

1. Assume a suitable firing position. Based on your situation, assume a firing position that will allow you to observe and engage targets, but that will reduce your exposure to enemy fire.
  - a. Prone position (Figure 1).
  - b. Sitting position (Figure 2).
  - c. Standing position (Figure 3).
  - d. Standing position for cupola-mounted gun (Figure 4).
  - e. Standing position for HMMWV-mounted gun (Figure 5).

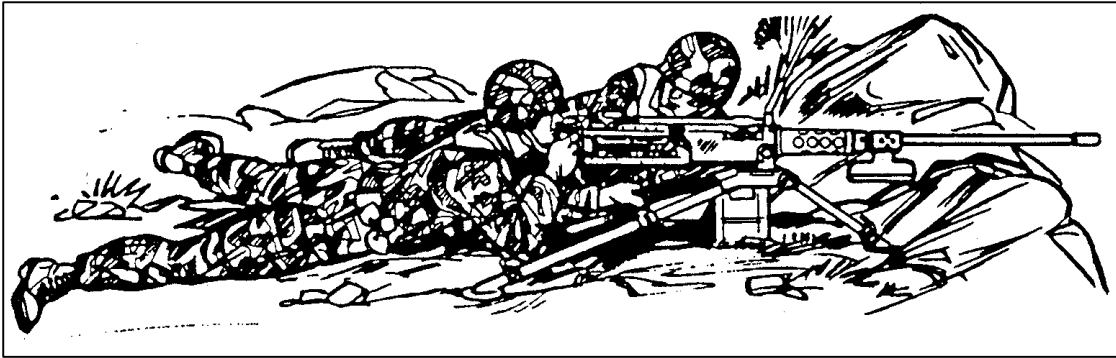
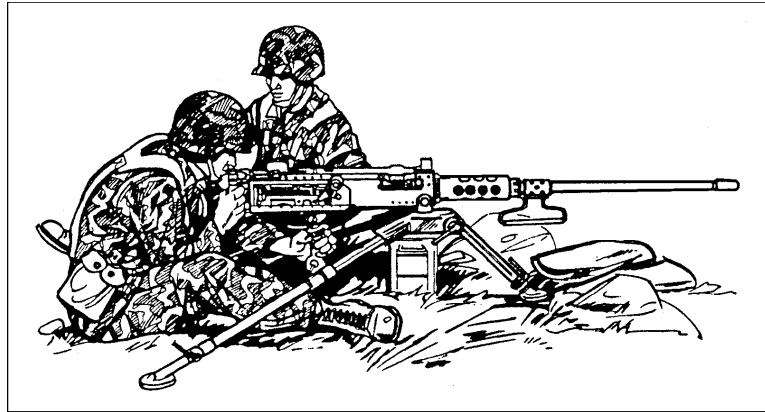
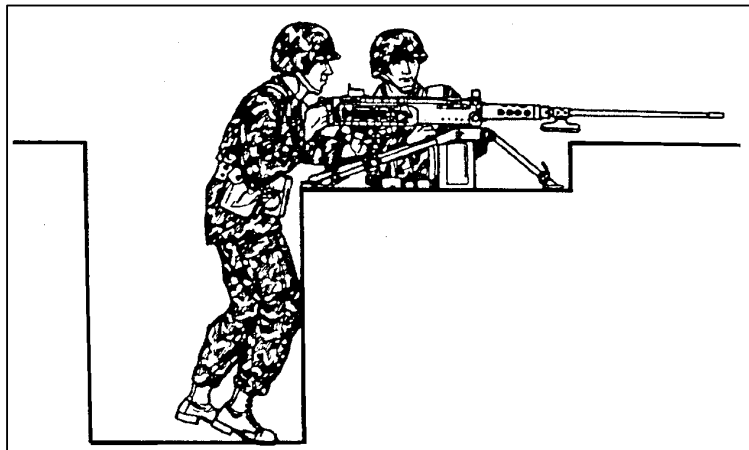


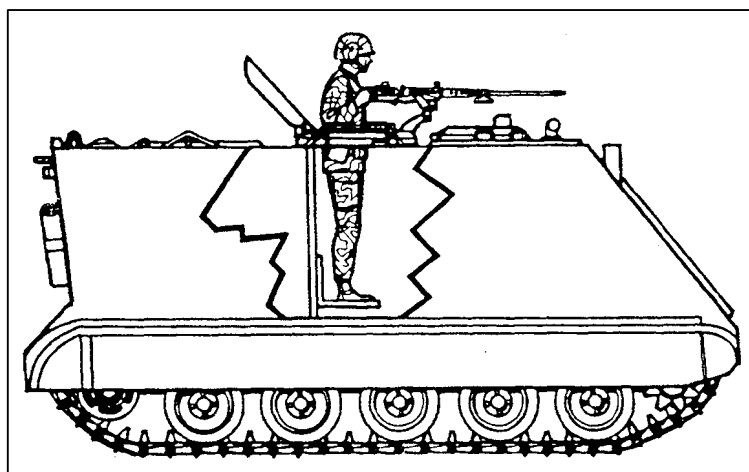
Figure 1. Prone position (tripod mount).



**Figure 2. Sitting position (tripod mount).**

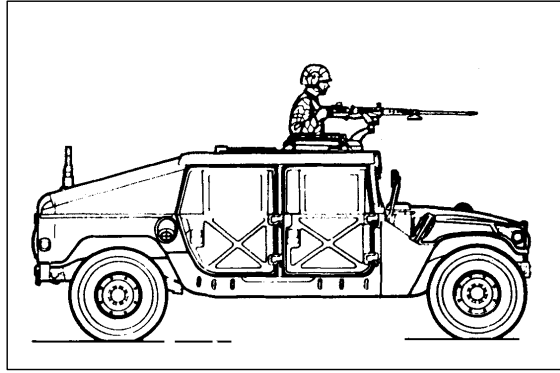


**Figure 3. Standing position (tripod mount).**



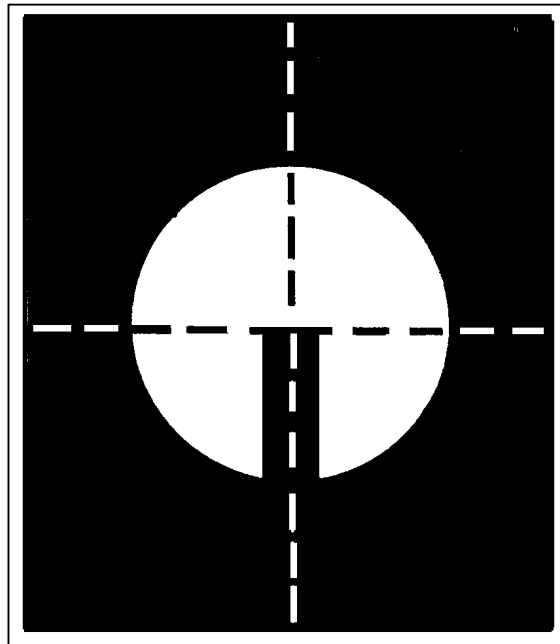
**Figure 4. Standing position (cupola mount).**



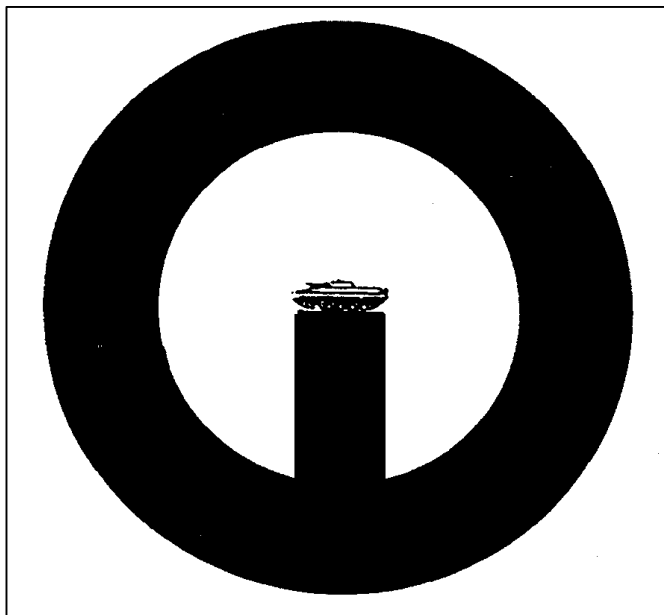


**Figure 5. Standing position (HMMWV mount).**

2. Obtain the correct sight picture.
  - a. Sight alignment. Center the front sight post in the peep sight ([Figure 6](#)).
  - b. Sight picture. Place top center of front sight blade at bottom center of intended target ([Figure 7](#)).
3. Apply the correct engagement technique based on target type ([Figure 8](#)).
  - a. Use the correct gun manipulation technique:
    - (1) Fixed fire. Refers to fire delivered against a point target. Only one aiming point is necessary, with little or no manipulation of the gun.



**Figure 6. Correct sight alignment.**



**Figure 7. Correct sight picture.**

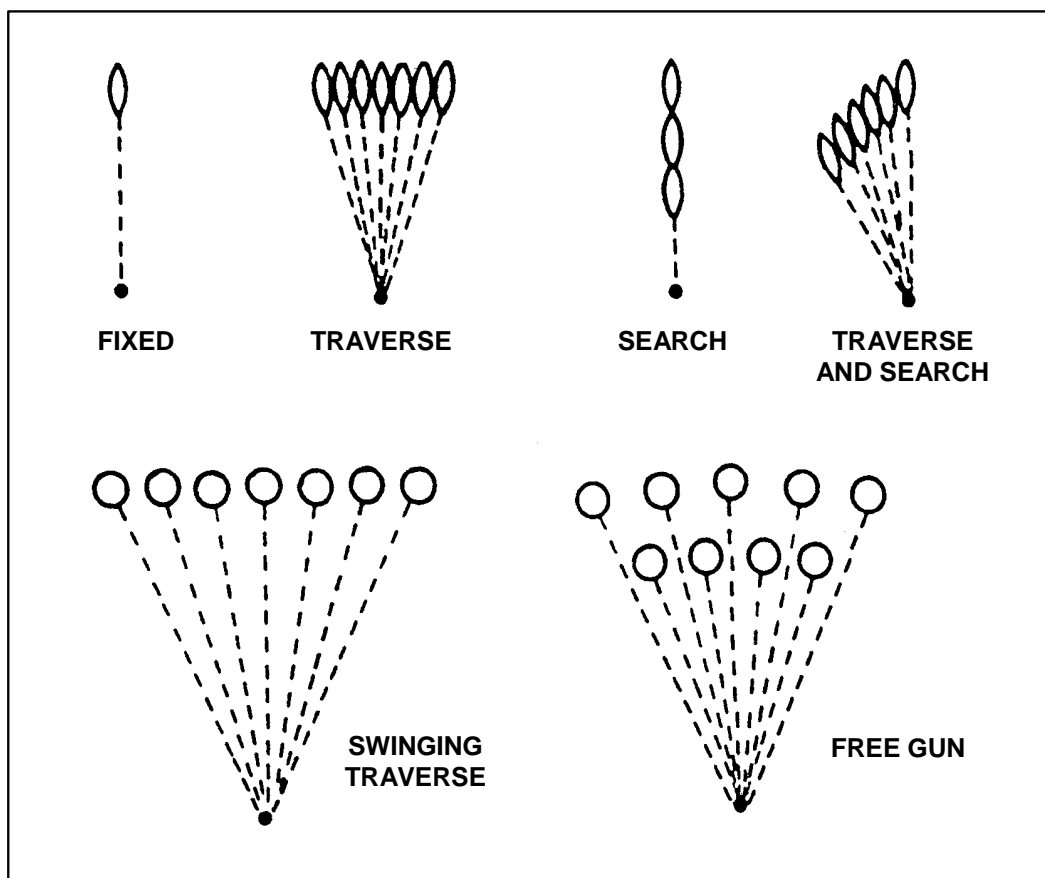
(2) Traversing fire. Refers to fire distributed against a wide target, requiring successive changes in the gun direction. To distribute fire laterally, use the T&E mechanism to traverse the gun left or right.

(3) Searching fire. Refers to fire delivered against a deep target or a linear target with depth by successively changing elevation. To distribute fire in depth, use the T&E mechanism to move the muzzle of the weapon up or down.

(4) Traversing and searching fire. Refers to fire delivered in width and depth by successive changes in direction and elevation. Use this type of fire against a target whose long axis is oblique to the direction of fire.

(5) Swinging traverse. Refers to fire delivered against targets that require major changes in direction but little or no change in elevation. Loosen the traversing slide lock enough to swing the gun laterally.

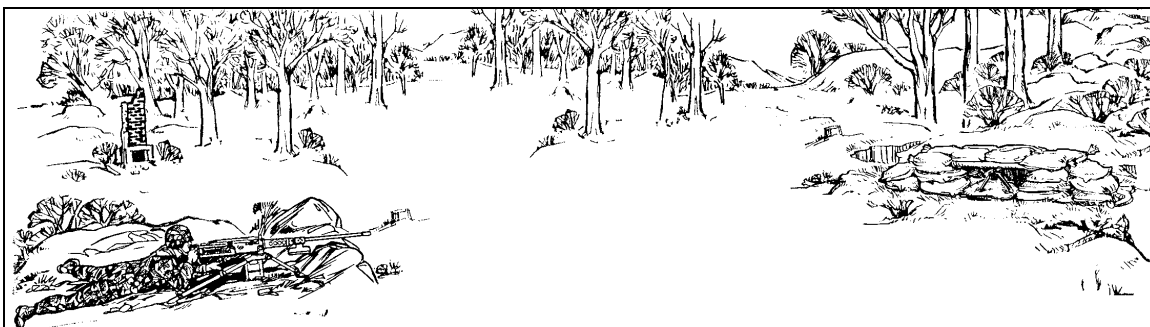
(6) Free gun. Refers to fire delivered against moving targets that must be rapidly engaged with fast changes in direction and elevation. To fire free gun, remove the T&E mechanism.



**Figure 8. Techniques of fire with respect to the gun.**

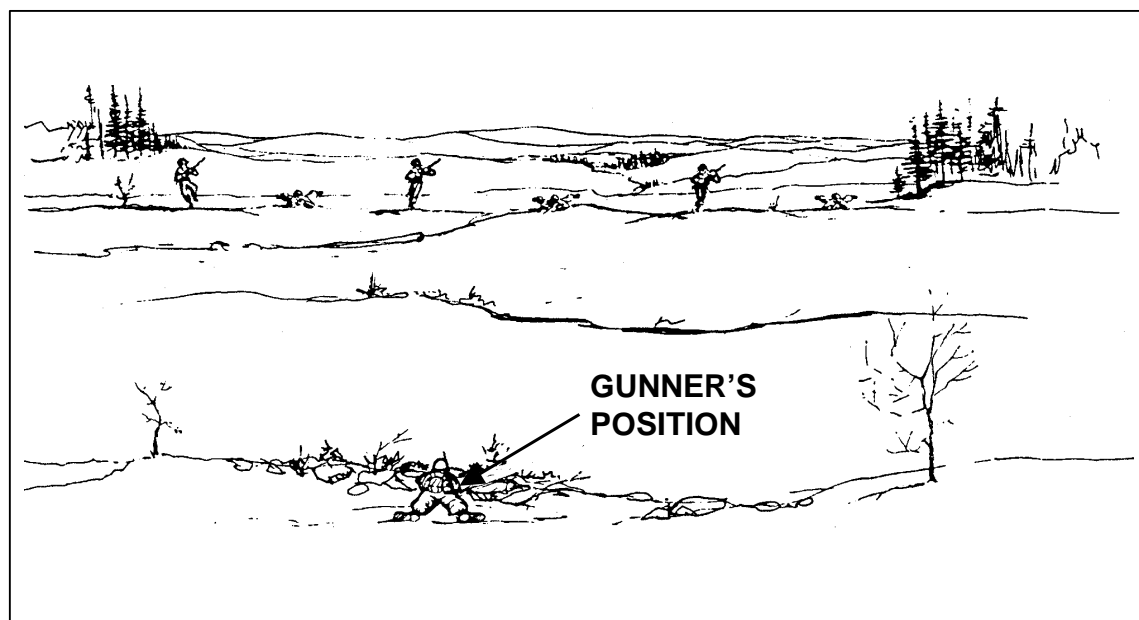
b. Correctly apply fire to engage specific targets.

(1) Point target. Engage point targets with fixed fire using a single aiming point (Figure 9).



**Figure 9. Point target.**

(2) Linear target. Initially aim at the midpoint of the target. Traverse fire to one flank and then to the other to cover the entire target (Figure 10).



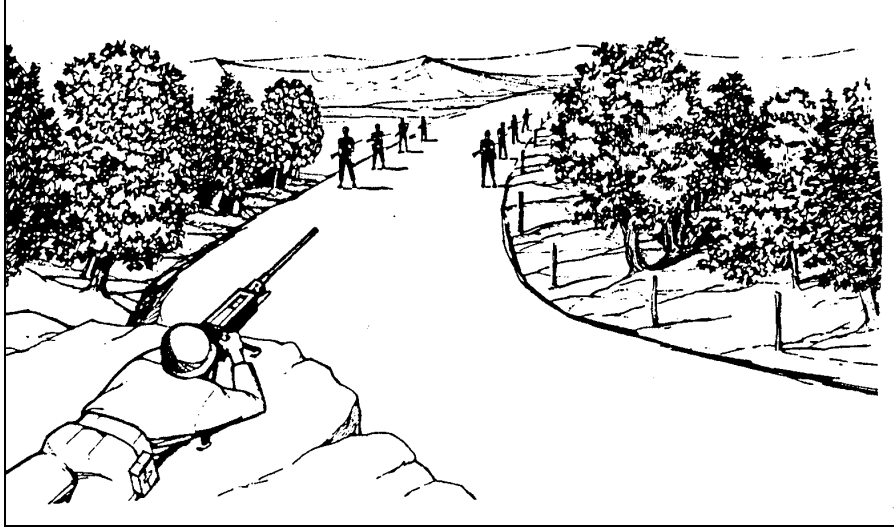
**Figure 10. Linear target and one gun.**

(3) Linear target with depth. Initially aim at the midpoint of the target, unless another portion of the target is more critical or presents a greater threat. Traverse and search to the flank closest to your position, then back to the other flank, so that you cover the entire target ([Figure 11](#)).



**Figure 11. Linear target with depth.**

(4) Deep target. Initially aim at the midpoint of the target, unless another portion of the target is more critical or presents a greater threat. Search down to the near end, then search up to the far end ([Figure 12](#)).



**Figure 12. Deep target.**

(5) Area target. Initially aim at midpoint of the target area. Traverse and search to either flank, then traverse and search to the opposite flank (Figure 13).

4. Observe fire and adjust the aiming point to place effective fire on the target.

a. Observation of fire. Observe bursts of fire by noting tracers in flight or the strike of the rounds in the target area.

b. Adjusted aiming point. Adjust fire quickly without adjusting the sight. If the initial burst misses the target, rapidly select a new aiming point the same distance from the center of impact of the initial burst but in the opposite direction. Fire a second burst (Figure 14).

5. Fire on the targets until they are all destroyed, or until you receive an order to cease fire.

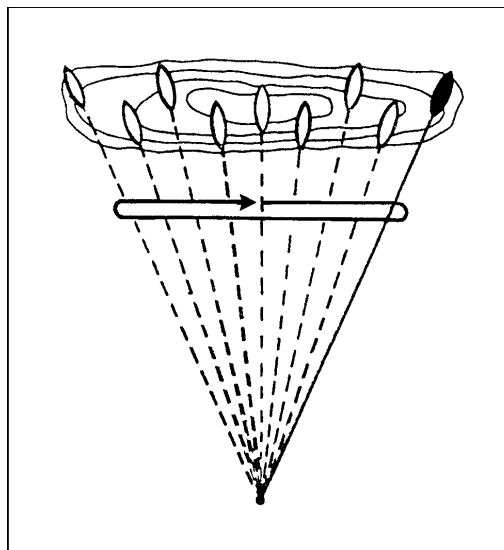


Figure 13. Engagement of area targets.

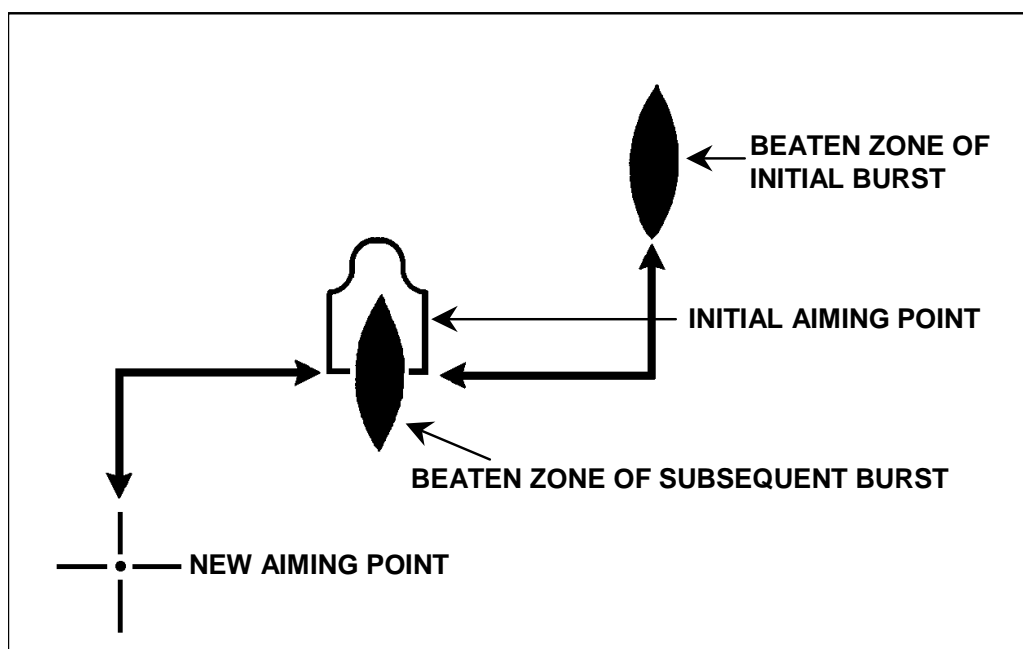


Figure 14. Adjusted aiming point method.

### EVALUATION PREPARATION

*Setup:* Evaluate this task on a 10-meter live-fire range equipped with the basic machine gun target pasters (FSN 6920-078-5128). Provide the soldier with a caliber .50 M2 machine gun (tripod mounted) with 236 rounds of linked .50 caliber ammunition (117 rounds for practice and 119 rounds for qualification). Conduct 10-meter firing IAW Table I, Appendix C, FM 23-65.

*Brief Soldier:* Tell the soldier he will fire Table I IAW Appendix C, FM 23-65 (brief the conditions, standards, and ammunition). Tell the soldier that when you instruct him to fire, you will evaluate his ability to apply correct target engagement techniques and to place effective fire on targets.

### EVALUATION GUIDE

Performance Measures	Results	
1. Assume a suitable firing position.	P	F
2. Apply correct engagement technique based on target type. a. Use correct gun manipulation technique. b. Use correct application of fire to engage specific targets.	P	F
3. Place effective fire on targets (score a minimum of 84 points).	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

Required	Related
FM 23-65 TM 9-1005-213-10	None

## **CORRECT MALFUNCTIONS OF A CALIBER .50 M2 MACHINE GUN 071-022-0005**

### **CONDITIONS**

Given a loaded caliber .50 M2 machine gun, mounted on a tripod or cupola, a sector of fire, an assistant gunner, linked caliber .50 ammunition, a ruptured cartridge extractor, a cleaning rod, cleaner lubricant preservative (CLP), lubricating oil arctic weather (LAW), cleaning swabs, and a headspace and timing gauge. The caliber .50 machine gun has been firing and one of the following situations has developed: The weapon has failed to fire; the weapon continues to fire after the trigger is released (uncontrolled fire); or the weapon is firing sluggishly.

### **STANDARDS**

Within 5 seconds after a caliber .50 machine gun fails to fire, take immediate action to return the weapon to service. *Do not identify* the cause of the malfunction. If immediate action is unsuccessful, perform remedial action. *Identify* the cause of the malfunction. Take immediate action to secure a runaway caliber .50 machine gun; then take remedial action to eliminate the malfunction. Take corrective action for a caliber .50 machine gun that is firing sluggishly.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Take immediate action to correct a failure to fire.
  - a. On a cool weapon, that is, one that has fired fewer than 150 rounds in 2 minutes—
    - (1) Hold the weapon on target.
    - (2) Wait 5 seconds in case the weapon has a hangfire.
    - (3) Pull the bolt to the rear. Return the retracting slide handle to its forward position. If the bolt locks to the rear, depress the bolt latch to return the bolt to the forward position.
    - (4) Try to fire. If the weapon fires, you have corrected the stoppage.
    - (5) If the weapon fails to fire, wait 5 seconds, pull the bolt to the rear, and lock it in the rearward position (engage with bolt latch). Return the retracting slide handle to its forward position.
    - (6) Proceed to Step 2, remedial action.
  - b. On a hot weapon, that is, one that has fired 150 or more rounds in 2 minutes—
    - (1) Hold the weapon on target.
    - (2) Wait 5 seconds in case there is a hangfire.
    - (3) Within the next 5 seconds, pull the bolt to the rear, return the retracting slide handle to its forward position, and try to fire. If the weapon fires, you have corrected the stoppage.



(4) If the weapon fails to fire, or if you were unable to retract the bolt during Step 1b(3), then you must keep the cover closed and wait 15 minutes to allow the weapon to cool.

(5) Go to Step 2.

### **DANGER**

**NEVER OPEN THE COVER ASSEMBLY ON A HOT WEAPON. THE WEAPON COULD COOK OFF, WHICH COULD DAMAGE THE WEAPON AND, MORE IMPORTANTLY, COULD KILL OR INJURE PERSONNEL.**

**APPLY IMMEDIATE ACTION TO A HOT WEAPON WITHIN 10 SECONDS. IF YOU ARE UNABLE TO EITHER FIRE OR REMOVE THE ROUND WITHIN 10 SECONDS, THEN YOU MUST WAIT ANOTHER 15 MINUTES BEFORE YOU CAN DO ANYTHING ELSE TO THE WEAPON.**

2. Take remedial action.

a. Open the cover assembly and check for faulty ammunition or an obstruction in the barrel assembly and chamber.

b. If a cartridge is in the T-slot of the bolt, and if it does not fall out, then hold the bolt to the rear, raise the extractor, and use a screwdriver to push the cartridge out the bottom of the receiver.

c. If a ruptured (separated) cartridge case is in the T-slot, remove it with a cleaning rod or ruptured cartridge extractor.

(1) When using the ruptured extractor, raise the cover. Pull and lock the bolt to the rear. Place the extractor in the T-slot the same way you would with a cartridge. Use the gun's extractor assembly ejector to hold the extractor in line with the bore. When the extractor is aligned with the bore, let the bolt go forward into the ruptured case. The shoulders will spring out in front of the case. Pull the bolt to the rear and remove the ruptured case and extractor.

(2) When using a cleaning rod, raise the cover. Pull and lock the bolt to the rear. Insert the cleaning rod in the front end of the barrel. Gently push the ruptured cartridge from the chamber.

d. Reload and try to fire the weapon. If the weapon does not fire, continue remedial action.

e. Disassemble the weapon and inspect for dirt, obstructions, and defective parts.

f. Clean the weapon, remove obstructions, and replace defective parts. Lubricate and assemble the weapon.

g. Set or adjust headspace and timing.

h. Replace faulty ammunition.

i. If the weapon still fails to fire, notify your supervisor.

3. Take immediate action to stop uncontrolled automatic fire (runaway gun).
  - a. Perform one of three actions:
    - Hold the weapon on target until it stops firing.
    - Have the assistant gunner twist the belt, causing the gun to jam.
    - Allow the weapon to fire remaining ammunition.
  - b. If you have fired all your ammunition, check to ensure the weapon is clear, and go to Step 3c. If you have not fired all your ammunition, and the weapon is hot (it has fired more than 150 rounds in less than 2 minutes), keep the cover assembly closed and wait 15 minutes, then proceed to Step 3c.
  - c. Disassemble the weapon and inspect for defective parts.
  - d. Clean the weapon, remove obstructions, replace defective parts, lubricate and assemble the weapon.
  - e. Check headspace and timing, and adjust them if necessary.
  - f. If the weapon still fails to fire properly, notify your supervisor.
4. Correct sluggish operation.
  - a. Clear the weapon.
  - b. Disassemble, clean, and lubricate the weapon.
  - c. Assemble the weapon.
  - d. Set headspace and timing.

### **EVALUATION PREPARATION**

*Setup:* You can evaluate this task at a test site rather than on a live fire range. Provide the materials and equipment listed in the task conditions statement. Give the soldier caliber .50 linked dummy rounds instead of live rounds. Insert an expended round in the belt to cause a stoppage.

*Brief Soldier:* Tell the soldier to assume a firing position behind the caliber .50 machine gun and to apply any required immediate action. Tell the soldier that the test does not require him or her to perform remedial action. Ask the soldier to describe the actions to perform for remedial action on cold and hot weapons, sluggish operation, and a runaway weapon.

## EVALUATION GUIDE

Performance Measures	Results	
1. Take immediate action for failure to fire within 10 seconds.	P	F
a. Hold the weapon on target.		
b. Wait 5 seconds in case the weapon has a hangfire.		
c. Within the next 5 seconds, pull the bolt to the rear, return the retracting slide handle to its forward position, and try to fire.		
d. If the weapon fails to fire, wait 5 seconds and take appropriate remedial action.		
2. Take remedial action on a cool weapon.	P	F
a. Open the cover assembly.		
b. Remove the ammunition belt.		
c. Remove the ruptured cartridge and all obstructions from the T-Slot, barrel assembly, and chamber.		
d. Reload and fire the weapon.		
e. If the weapon does not fire, disassemble it, and inspect it for dirt, obstructions, and defective parts.		
f. Clean the weapon, remove obstructions, replace defective parts, lubricate it, assemble it, and set the headspace and timing.		
g. Replace faulty ammunition.		
h. If the weapon still fails to fire, notify your supervisor.		
3. Take remedial action on a hot weapon.	P	F
a. Keep the cover closed and wait 15 minutes to allow the weapon to cool.		
b. Perform the same procedures as for cool weapon after waiting period.		
4. Take action to stop uncontrolled automatic fire (runaway gun).	P	F
a. Perform one of three actions:		
• Hold the weapon on target until it stops firing.		
• Have the assistant gunner twist the belt, causing the gun to jam.		
• Allow the weapon to fire remaining ammunition.		
b. Take the appropriate remedial action based on whether the weapon is hot or cold.		
5. Correct sluggish operation.	P	F
a. Clear the weapon.		
b. Disassemble, clean, and lubricate the weapon.		
c. Assemble the weapon.		
d. Set headspace and timing.		

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

**Required**  
FM 23-65  
TM 9-1005-213-10

**Related**  
None

## UNLOAD A CALIBER .50 M2 MACHINE GUN

### 071-022-0004

#### CONDITIONS

Given a caliber .50 M2 machine gun, mounted on a tripod or cupola, loaded with linked caliber .50 ammunition.

#### STANDARDS

Remove all ammunition and links from the machine gun. Clear the weapon, ensuring the chamber is empty and the weapon is in the single-shot mode.

#### EVALUATION PREPARATION

*Setup:* Provide all equipment and materials listed in the task conditions statement. You can evaluate this task in a classroom or training area using dummy linked caliber .50 ammunition.

*Brief Soldier:* Tell the soldier to unload and clear the caliber .50 M2 machine gun.

#### EVALUATION GUIDE

Performance Measures	Results	
1. Place the gun in the single-shot mode.	P	F
2. Raise the cover.	P	F
3. Remove the ammunition belt from the feedway.	P	F
4. Close the cover.	P	F
5. Pull bolt to the rear and lock it.	P	F
6. Raise cover and inspect to make sure there are no rounds in the chamber.	P	F
7. Hold charging handle and release the bolt, allowing it to move slowly forward.	P	F
8. Press the trigger.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

**Required**  
FM 23-65  
TM 9-1005-213-10

**Related**  
None

# MK 19 MACHINE GUN

## MAINTAIN A MK 19 MACHINE GUN 071-030-0001

### CONDITIONS

Given a MK 19 machine gun, an M3 tripod, a traversing and elevating (T&E) mechanism, an M64 cradle mount; rifle bore cleaner (RBC) and lubricating oil (LSA), or lubricating oil (LSAT or LAW); grease (GMD); cleaning solvent (PD680); wiping rags or cloth (abrasive crocus); a cleaning rod assembly and a small arms cleaning brush; linked 40-mm ammunition and one spent 40-mm cartridge case.

### STANDARDS

Clean and lubricate the MK 19 and its components. Inspect all parts and turn in those in need of maintenance. Reassemble the gun so that it is operational. Clean and inspect ammunition for serviceability, and turn in any unserviceable ammunition.

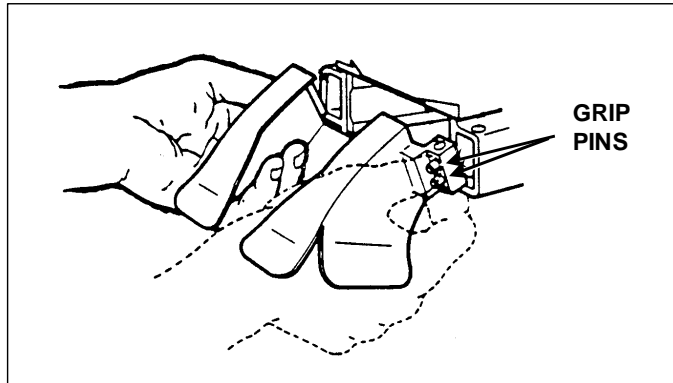
### TRAINING AND EVALUATION Training Information Outline

1. Clear the MK 19.
  - a. Place the safe/fire switch on the safe (S) position. Ensure the bolt is forward.
  - b. Open the top cover and inspect the feed tray and extractors on the bolt face to ensure that no round is in the pickup position.

#### **WARNING**

**The top cover has no mechanical support to hold it open. Avoid allowing it to slam shut. When you do close it, lower it carefully to prevent personal injury or equipment damage.**

- c. Unlock and pull the charger handle 2 or 3 inches to the rear; inspect the face of the bolt and the chamber for ammunition.
  - d. Return the bolt to the forward position and rotate the charger handle to the locked position.
2. Disassemble the MK 19.
  - a. Remove the feed throat assembly (Figure 1). Squeeze the two sets of grip pins together and pull them straight out.
  - b. Remove the bolt and backplate assembly.

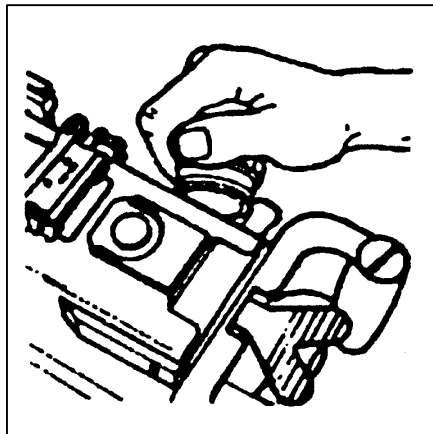


**Figure 1. Removal of feed throat assembly.**

**WARNING**

**Make sure the bolt is in the forward position before you remove the backplate pin assembly. Failure to observe this warning will result in injury.**

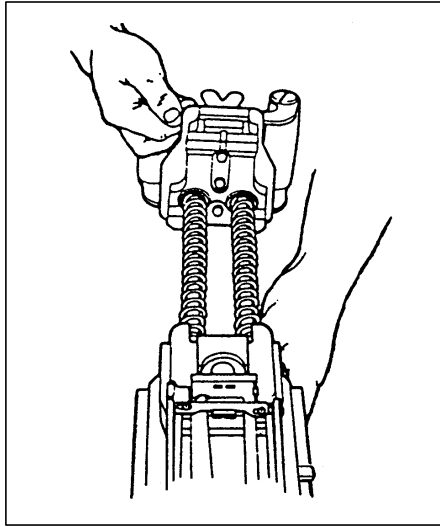
- (1) Place the safe/fire switch on fire (F).
- (2) Open the top cover.
- (3) Using the rim of a spent cartridge, pull the backplate pin straight out ([Figure 2](#)).



**Figure 2. Removal of backplate pin.**

- (4) Lift up slightly on the backplate assembly. Slowly pull the bolt and backplate assembly out of the receiver.
- (5) Support the bolt with one hand and maintain a control grip with the other hand. Lift the bolt up slightly and remove it ([Figure 3](#)).





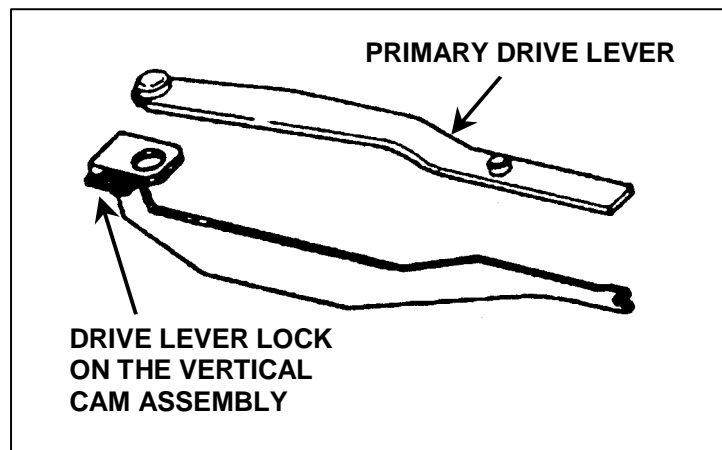
**Figure 3. Removal of bolt and backplate assembly.**

- c. Remove the primary drive lever and vertical cam assembly.

**CAUTION**

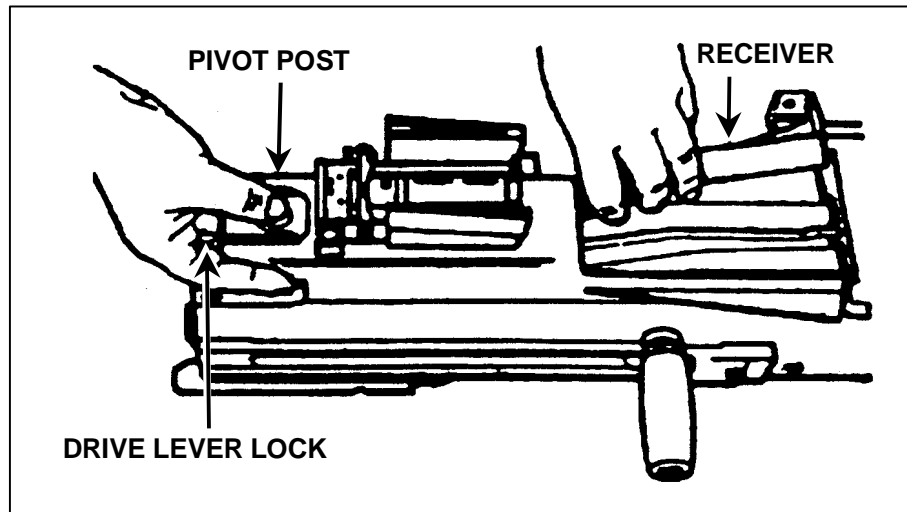
Do not rest the vertical cam assembly on its chromed surface.

- (1) Reach under the top of the receiver to locate the drive lever lock on the vertical cam assembly and slide the lock rearward about 1/4 inch (Figure 4).



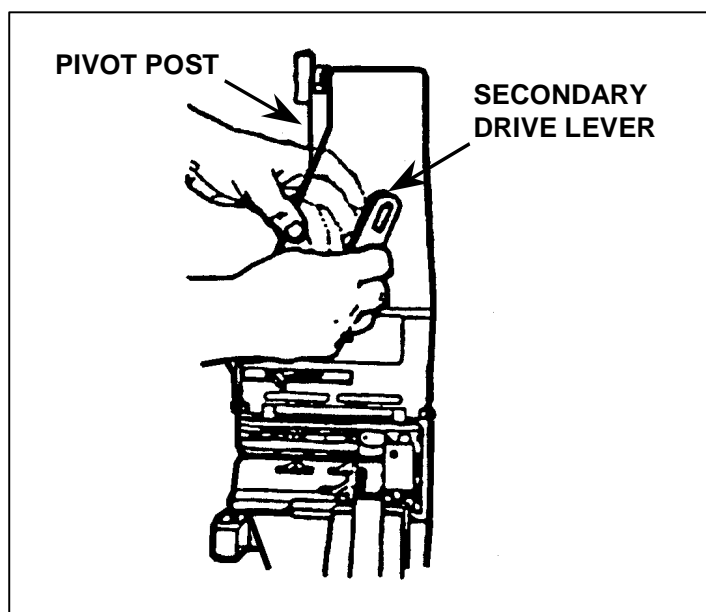
**Figure 4. Primary drive lever and vertical cam assembly.**

- (2) Press down on the primary drive lever's pivot post. This releases the primary drive lever and vertical cam assembly (Figure 5).



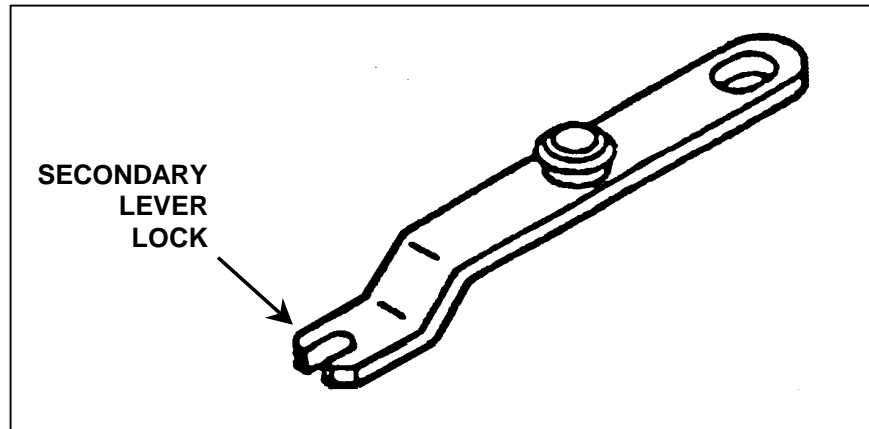
**Figure 5. Removal of the primary drive lever and vertical cam assembly.**

- (3) Pull out the cam (to the rear) and the lever from the receiver.
- d. Remove secondary drive lever.
- (1) Push down on the pivot post from the outside top cover. This releases the secondary drive lever ([Figure 6](#)).



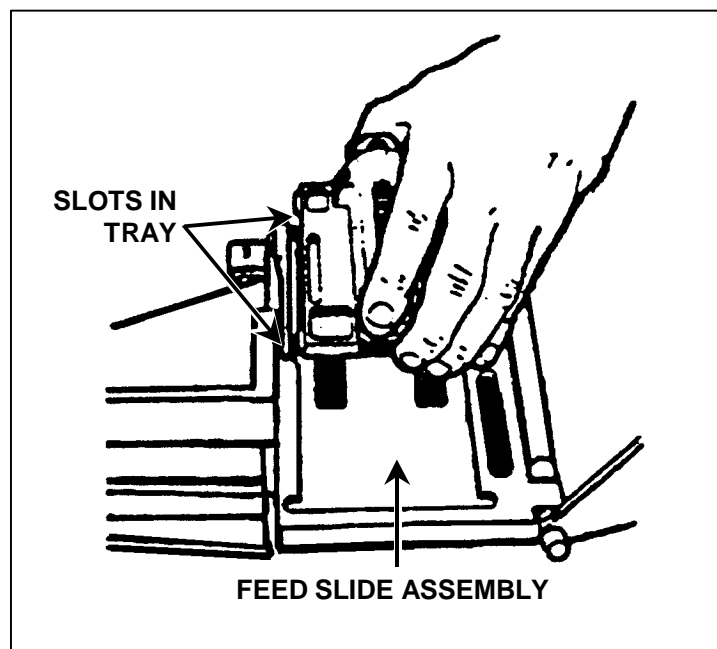
**Figure 6. Removal of the secondary drive lever.**

- (2) Lift out the secondary drive lever from the top cover ([Figure 7](#)).



**Figure 7. Secondary drive lever.**

- e. Remove the feed slide assembly ([Figure 8](#)).
- (1) Pivot the tray that holds the feed slide assembly out of the top cover.
  - (2) Move the feed slide assembly to line up the tabs with the slots in the tray.
  - (3) Lift upward on the feed slide assembly.



**Figure 8. Removal of the feed slide assembly.**

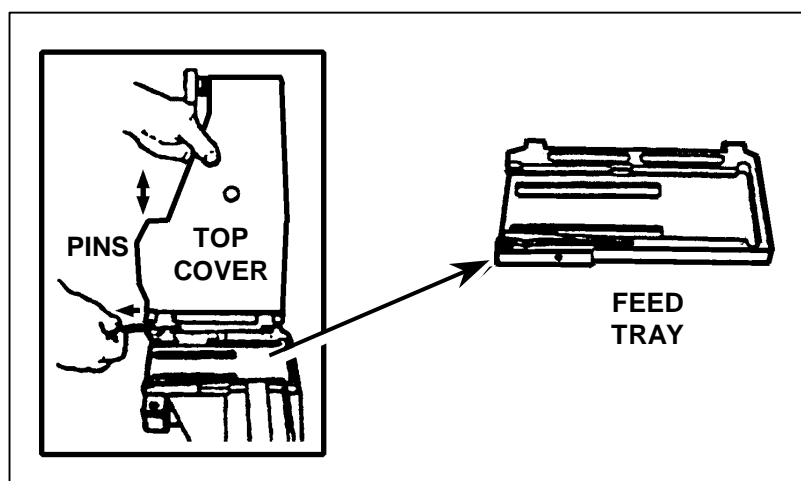
- f. Remove the top cover assembly and feed tray ([Figure 9](#)).

**CAUTION**

Using your fingers only, not pliers, remove and insert the top cover pins. Forcing the pin could break the small cross pin on the rod.

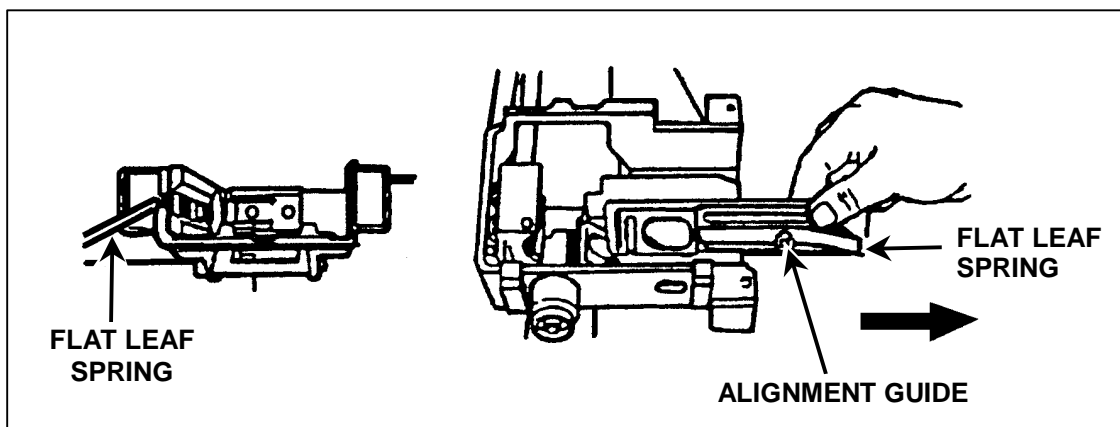
**NOTE:** The feed tray must be down for you to remove the top cover pins.

- (1) Hold the top cover straight up to align the end of the cross pin.
- (2) Pull straight out on the pins.
- (3) Lift off the top cover.
- (4) Lift the tray out of the feeder.



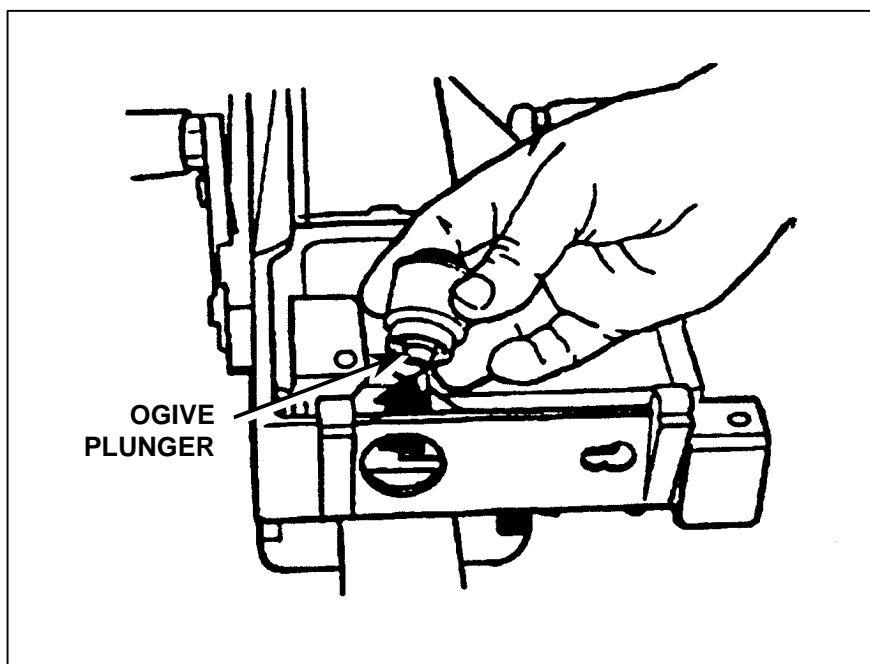
**Figure 9. Removal of the top cover assembly and feed tray.**

- g. Remove the alignment guide assembly ([Figure 10](#)).
  - (1) Depress the flat leaf spring by using a cartridge link toggle (male end) or a small tool.
  - (2) Slide the alignment guide toward the feeder mouth.
  - (3) Pull rearward on the alignment guide and lift it out.



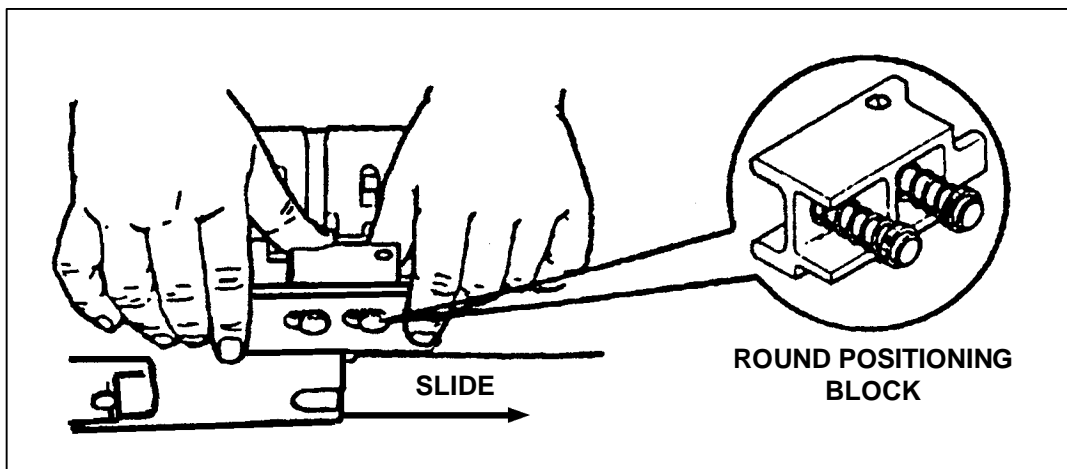
**Figure 10. Removal of the alignment guide assembly.**

- h. Remove the ogive plunger by pulling it out (Figure 11).



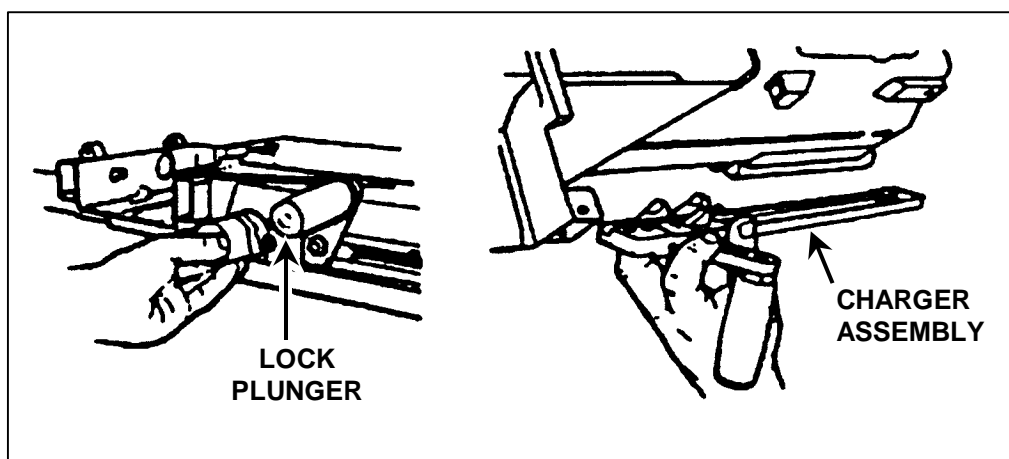
**Figure 11. Removal of the ogive plunger.**

- i. Remove the round positioning block (Figure 12).
- (1) Push in and slide the round positioning block toward the muzzle end of gun.
  - (2) Pull the round positioning block away from the wall of the receiver.



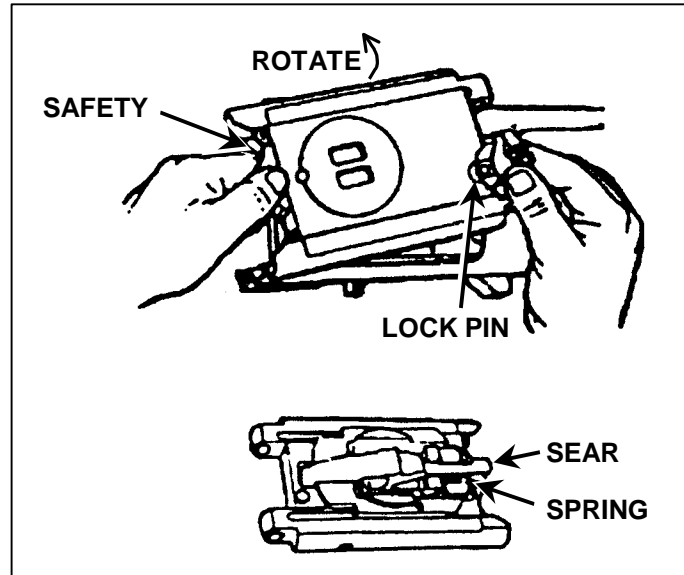
**Figure 12. Removal of the round positioning block.**

- j. Remove the charger assemblies (both sides) (Figure 13).
- (1) Rotate the charger handle up.
  - (2) Using either your fingers or a spent case, pry out on the lip of the lock plunger.
  - (3) Lift up on the lock plunger to retract it; slide the charger assembly all the way to the rear.
  - (4) Pull the charger assembly away from the receiver.



**Figure 13. Removal of the charger assembly.**

- k. Remove the receiver sear assembly (Figure 14).
- (1) Turn the receiver over on its top. Put the safe/fire switch in fire (F) position.
  - (2) Lift up slightly on the lockpin with your fingers, using a cartridge link.
  - (3) Squeeze the receiver sear (underneath the safety) and simultaneously rotate the sear housing assembly approximately 15 degrees in either direction.



**Figure 14. Removal of the receiver sear assembly.**

(4) Press down on the sear housing assembly and rotate the assembly until it stops (90 degrees from its original position).

(5) Press the receiver sear and safety together while you put safe/fire switch on safe (S). This locks the sear in the down position and keeps you from accidentally losing the sear spring.

(6) Lift out the sear housing assembly.

3. Clean the parts of the MK 19.

**NOTE:** Do not reverse the direction of the bore brush while it is in the bore.

a. Clean the receiver assembly (Figure 15).

(1) Apply solvent to a rag or brush. Wipe or brush dirt away from all parts, especially the interior of the receiver housing, receiver rails, and feeder.

(2) Swab out the bore and chamber, using a bore brush and RBC.

(3) Wipe all parts dry.

b. Clean the receiver sear assembly (Figure 14).

(1) Use only cleaning solvent on a rag or brush.

(2) Wipe or brush away dirt.

(3) Wipe dry.

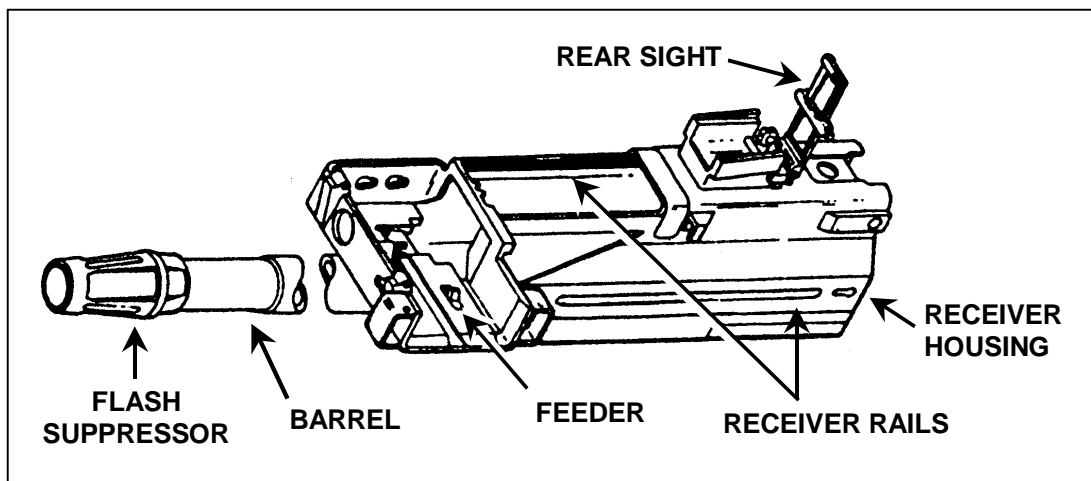


Figure 15. Receiver assembly.

**WARNING**

Never immerse the sear housing assembly in solvent. Solvent may dilute the lubricant inside the sear housing.

- c. Clean the alignment guide assembly, ogive plunger, round positioning block, and secondary drive lever: Wipe or brush off dirt and dry.

**WARNING**

Never immerse the ogive plunger assembly in solvent.

- d. Clean the charger assemblies.
  - (1) Apply cleaning solvent to a rag or brush, and wipe or brush off any dirt.
  - (2) Wipe dry.
- e. Clean the vertical cam assembly, primary drive lever, feed slide assembly, and feed tray.
  - (1) Soak in cleaning solvent.
  - (2) Wipe or brush off dirt.
  - (3) Wipe dry.
- f. Clean the top cover assembly.
  - (1) Apply cleaning solvent to a rag or brush and wipe or brush off dirt from all parts.
  - (2) Wipe all surfaces dry.
- g. Clean the bolt and backplate assembly.
  - (1) Apply cleaning solvent to rag or brush and wipe or brush off dirt from all parts.
  - (2) Wipe all surfaces dry.



**WARNING****Never immerse the bolt assembly in cleaning solvent.**

4. Clean the components.
  - a. Clean the T&E mechanism.
    - (1) Remove foreign matter with a clean, dry wiping rag.
    - (2) Use a small arms cleaning brush to clean the numbers on the scale.
  - b. Clean the M3 tripod, MK64 gun cradle mount, and pintle.
    - (1) Use a cleaning swab saturated with carbon removing compound remove dirt.
    - (2) Wipe all parts dry with clean wiping rags.
5. Clean ammunition: Remove foreign matter with a clean, dry wiping rag.
6. Inspect all MK 19 parts for serviceability.
  - a. Receiver assembly.
    - (1) Check the receiver housing for cracks and rust.
    - (2) Check the receiver rails for burrs and cracked welds.
    - (3) Check the feeder pawls for burrs and lack of spring action. Check the pins for retention.
    - (4) Check the barrel for carbon buildup and pitting in the bore and chamber.
    - (5) Check the flash suppressor for dents, cracks, and erosion. Make sure minimal movement is maintained.
    - (6) Check the rear sight for rust, binding, and broken or bent parts.
  - b. Receiver sear assembly.
    - (1) Check for burrs on all parts.
    - (2) Closely inspect the rear shoulder for burrs.
  - c. Alignment guide assembly.
    - (1) Check the alignment guide spring for deformity, cracks, and looseness.
    - (2) Check the pin for breaks and cracks.
  - d. Ogive plunger assembly and round positioning block.
    - (1) Check the ogive plunger head for burrs and broken parts.
    - (2) Check the round positioning block for weak spring action and loose or broken parts.
  - e. Charger assembly (left and right).
    - (1) Check the grooved edges for burrs and bends.
    - (2) Check the latches for spring action on detents.
    - (3) Check the entire charger assembly for cracks, burrs, bends, and chips.
  - f. Vertical cam assembly and primary drive lever.
    - (1) Check the vertical cam assembly for bends, burrs, pits, scratches, and aluminum buildup on chromed surface (mirror-like surface).
    - (2) Check the drive lever lock for looseness or binding.
    - (3) Check the primary drive lever for burrs, especially around the pivot posts.
  - g. Secondary drive lever.
    - (1) Check for missing retaining ring from the pivot post.
    - (2) Check the pivot post and forked end for burrs.

- h. Feed slide assembly and feed tray.
    - (1) Check the feed pawls and feed tray for burrs and binding.
    - (2) Check the guide rails for burrs.
  - i. Top cover assembly.
    - (1) Check the top cover housing for cracks and rust.
    - (2) Check the latch for binding, looseness, and breaks.
    - (3) Check the cover pin for sheared or broken cross pin.
  - j. Bolt and backplate assembly.
    - (1) Check the cocking lever for chips, burrs, and breaks.
    - (2) Check the guide rods for binding and bends.
    - (3) Check the recoil spring for weak action: Position the bolt end against a hard, flat surface and push up and down on backplate assembly.
    - (4) Check the backplate pin for a missing retaining spring.
    - (5) Check the safety wire for looseness and breaks, or if missing.
  - k. Report any deficiencies to your supervisor.
7. Inspect all components for serviceability.
- a. T&E mechanism.
    - (1) Inspect the hand wheels for smooth operation and rust. Check the threads for burrs and rust.
    - (2) Check the traversing slide lock for spring action. Make sure the elevating mechanism sleeve fits on the traversing bar and clamps firmly.
    - (3) Check the traversing and elevating scales for legibility.
    - (4) Inspect the quick release pin and chain for burrs and rust; check for missing spring-loaded balls.
  - b. M3 Tripod.
    - (1) Check for completeness of tripod; make sure all nuts and bolts are tightly secured.
    - (2) Check for cracks on the legs and tripod head.
    - (3) Check for missing, broken, or inoperative lock latch.
    - (4) Check the pintle lock release cam for correct operation.
    - (5) Check the locking action of the front leg clamping assembly.
    - (6) Make sure the rear legs lock in the open position, the sleeve latch notch and the right leg slide notch engage completely, and the latch spring has good tension.
    - (7) Check the telescoping, indexing, and locking actions of rear legs and front leg locking assembly.
  - c. MK 64 gun cradle mount.
    - (1) Check for missing or damaged parts.
    - (2) Check for rust, cracks, and burrs.
    - (3) Inspect pintle lock assembly for nut, bolt, and cotter pin. Check the pintle surface for burrs and rust.
  - d. Report any deficiencies to supervisor.
8. Inspect ammunition for damage and corrosion. Turn in any unserviceable ammunition.

9. Lubricate the MK 19 and components. Do not use CLP, and do not mix lubricants.

**CAUTION**

1. Never immerse the sear housing, ogive plunger, or bolt assemblies in cleaning solvent. Solvent could dilute the lubricant or grease inside.
2. Never lubricate MK 19 with CLP.
3. Avoid mixing lubricants.
4. Completely wipe off all excess lubricant.

a. Lubricate lightly to moderately with LSAT, LSA, or GMD (never CLP). In cold weather (0° to minus 25° Fahrenheit), use LSAT, LSA, GMD, or LAW. In extra cold weather (-25°Fahrenheit and below) use LAW.

b. Apply lubricant to all weapon parts and surfaces except charger handles. Work in the lubricant by moving the parts.

c. Lubricate all components and wipe them with an oily rag to remove excess oil.

10. Assemble the MK 19 machine gun.

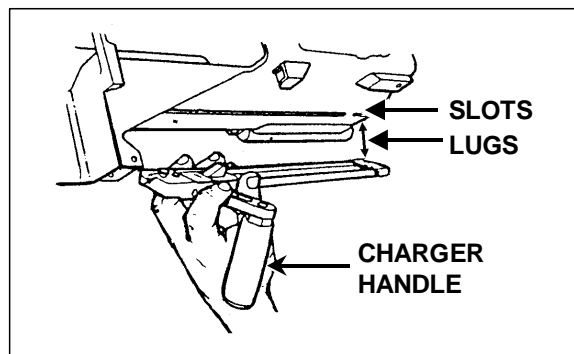
a. Attach the charger assemblies (both sides) (Figure 16).

(1) Turn the receiver upright.

(2) Rotate the charger handles to the straight-up position.

(3) Line up the lugs on the charger with the slots in the receiver rail. Insert the charger lugs into the slots.

(4) Hold the charger tightly against the rail. Slide the charger forward until it locks into place.

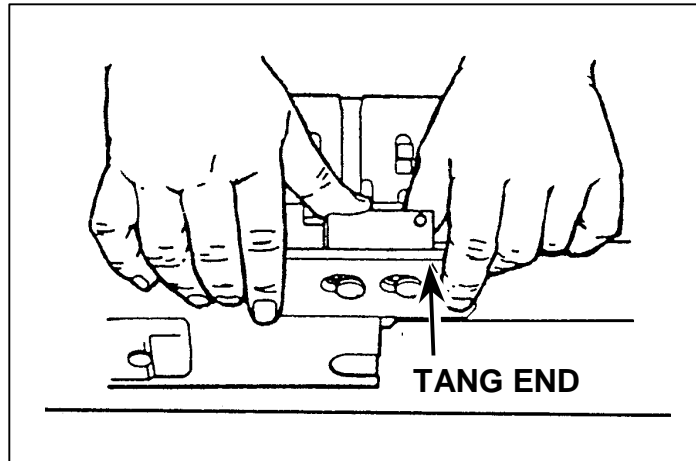


**Figure 16. Attachment of the charger assemblies.**

b. Attach the round positioning block (Figure 17).

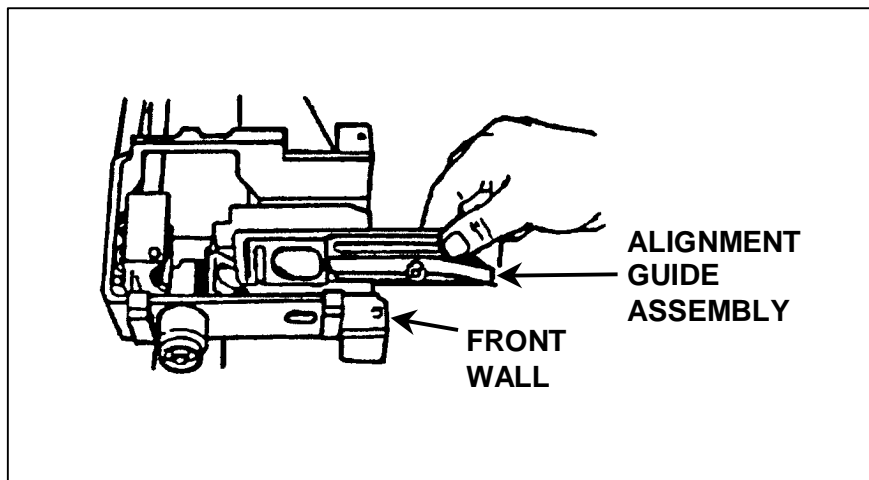
(1) Insert the blocks into the slots with the tang end forward.

(2) Push against the block and slide it toward the rear until the block locks into place.



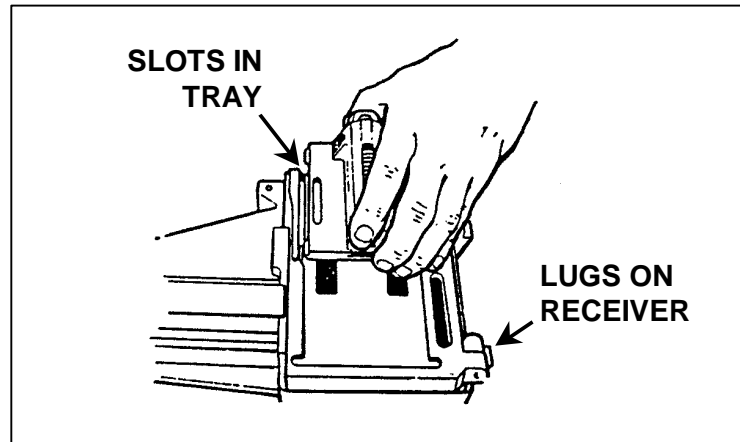
**Figure 17. Attachment of the round positioning block.**

- c. Insert the ogive plunger assembly into the opening.
- d. Insert the alignment guide assembly ([Figure 18](#)).
  - (1) Position the alignment guide assembly so that the pin is lined up with the slot in the feeder wall.
  - (2) Hold the alignment guide against the front wall and slide the alignment guide into the receiver until it clicks.



**Figure 18. Insertion of the alignment guide assembly.**

- e. Attach the feed tray and feed slide assembly ([Figure 19](#)).
  - (1) Place the tray in the top of the feeder, recessed side up.
  - (2) The pinholes on the tray should line up with the lugs on the receiver.
  - (3) Position the feed slide assembly by lining up the tabs with the slots on the tray.
  - (4) Insert the tabs into the slots. Drop the feed slide assembly into the tray and move it slightly to ensure engagement.

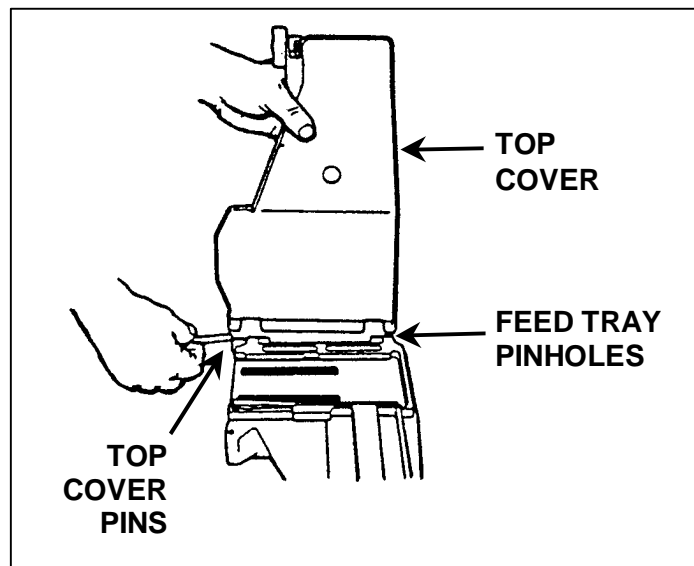


**Figure 19. Attachment of the feed slide assembly.**

- f. Attach the top cover assembly ([Figure 20](#)).
- (1) Ensure the feed tray is in the proper place in the receiver.
  - (2) Place the top cover on the receiver. Line up the pinholes on the cover with the receiver's lug end and the pinholes on the feed tray.
  - (3) Hold the top cover straight up. Insert the top cover pins on both sides. Fully insert the cross pin. Rotate the top cover so that it is fully open.

**WARNING**

To avoid breaking the cross pin, be sure to insert it fully into the receiver before you close the top cover.

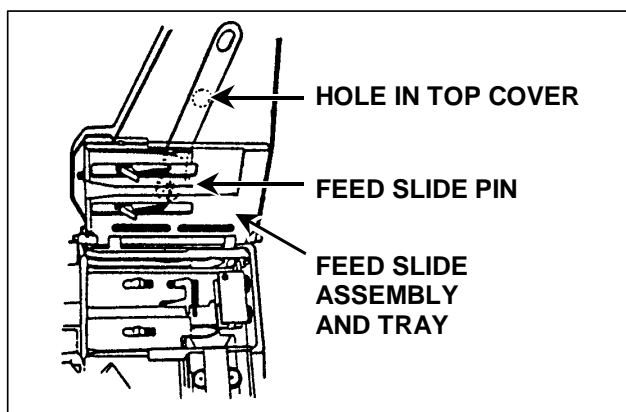


**Figure 20. Attachment of the top cover assembly.**

- g. Engage the secondary drive lever ([Figure 21](#)).
  - (1) Rotate the feed slide assembly and tray upward.
  - (2) Engage the forked end of the secondary drive lever with the feed slide pin.
  - (3) Press the raised pivot post through the hole in the stop cover.
  - (4) Press the secondary drive lever against the top cover until it locks into place.

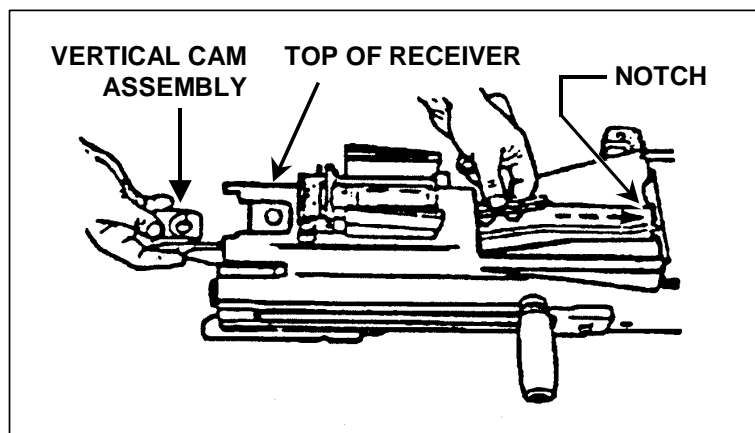
**CAUTION**

Be sure to engage the secondary drive lever with the feed slide pin, or the gun will not fire.



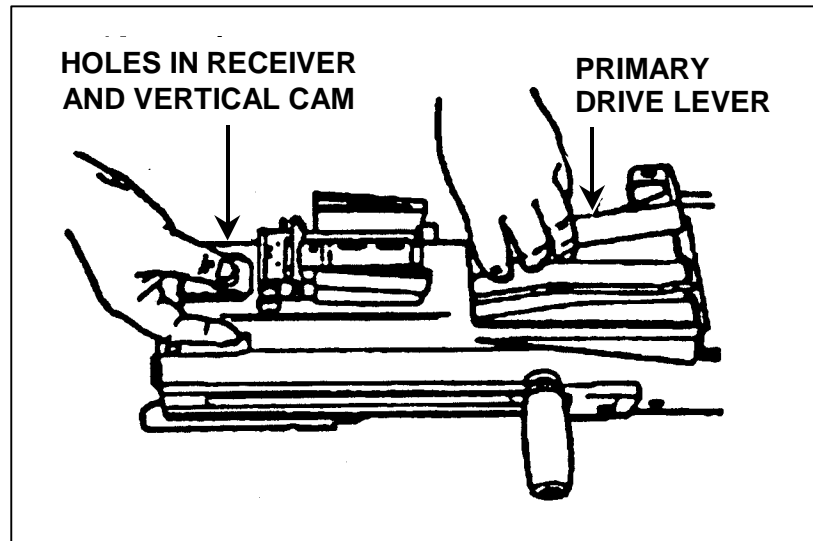
**Figure 21. Engaging the secondary drive lever.**

- h. Engage the vertical cam assembly ([Figure 22](#)).
  - (1) Slide the vertical cam assembly through the rear of the receiver. The raised portion should slide over the top of the receiver. The drive lever lock should be underneath.
  - (2) Engage the forked end in the notch.



**Figure 22. Engaging the vertical cam assembly.**

- i. Engage the primary drive lever (Figure 23).
- (1) Hold the vertical cam assembly in place and slide the primary drive lever into the receiver.
  - (2) Slide the primary drive lever lock to the rear and engage the pivot post lever through the holes in the receiver and vertical cam.
  - (3) Slide the primary drive lever lock forward. (The primary drive lever lock is located on the vertical cam just beneath the top of the receiver.)



**Figure 23. Engaging the primary drive lever.**

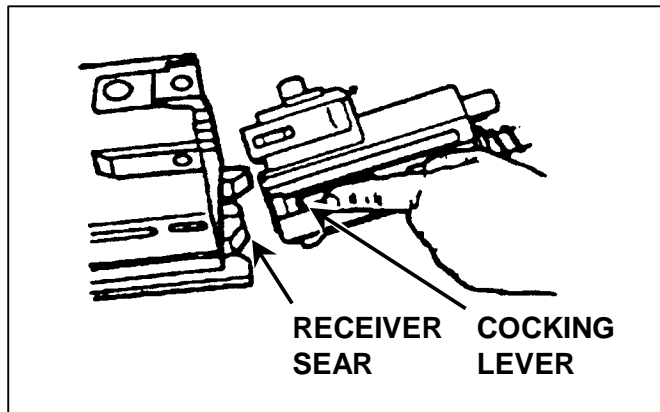
- j. Insert the bolt and backplate assembly (Figure 24).
- (1) Place the safe/fire switch in the fire (F) position.
  - (2) Press the receiver sear using your thumbs or the rim of a cartridge case.
  - (3) Make sure the cocking lever is cocked and forward.
  - (4) Slide the bolt and backplate assembly all the way forward.
  - (5) Insert the backplate pin to lock the assembly in place.
  - (6) Close the cover.

**WARNING**

**Before inserting the bolt and backplate assembly, put the cocking lever in the forward position.**

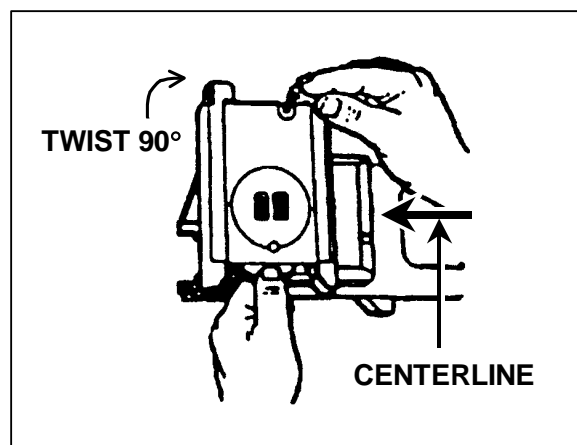
**CAUTION**

Before closing the top cover, always make sure the secondary drive lever engages the feed slide pin, the feed slide assembly is to the left, and the bolt is forward. Never try to force the top cover closed. Doing so could damage the weapon.



**Figure 24. Insertion of the bolt and backplate assembly.**

- k. Attach the receiver sear assembly ([Figure 25](#)).
  - (1) Turn the receiver over on its top.
  - (2) Place the sear housing on the receiver and line up the sear housing assembly at a right angle to the barrel centerline.
  - (3) Put the safe/fire switch on fire (F) position.
  - (4) Press down and rotate the housing assembly until it stops.
  - (5) Press up on the sear and rotate it until it locks in position.



**Figure 25. Attachment of the receiver sear assembly.**

- l. Attach the feed throat assembly.
    - (1) Squeeze the grip pins and align them with the holes in the receiver.
    - (2) Release the grip pins to attach the feed throat.
11. Perform a function check to make sure you have assembled the weapon correctly (see Task 071-030-0007, Perform a Function Check on a MK 19 Machine Gun).



## EVALUATION PREPARATION

Setup: At the test site, provide the soldier with the equipment listed in the task conditions statement. Use the performance steps in the training outline to evaluate the soldier's performance of the task.

Brief Soldier: Tell the soldier to perform operator level maintenance on the MK 19 and to perform a function check to ensure the weapon functions correctly.

## EVALUATION GUIDE

Performance Measures	Results	
1. Clear the weapon.	P	F
2. Disassemble the weapon without damaging any parts.	P	F
3. Clean the weapon parts.	P	F
4. Clean the components.	P	F
5. Clean the ammunition.	P	F
6. Inspect all parts, components, and ammunition for serviceability.	P	F
7. Report all deficiencies to your supervisor.	P	F
8. Lubricate the weapon parts and components using the correct lubricant and lubrication techniques.	P	F
9. Assemble the weapon in the correct sequence without damaging any parts.	P	F
10. Perform a function check.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

FM 23-27

TM 9-1010-230-10

### Related

None

## MOUNT A MK 19 MACHINE GUN ON AN M3 TRIPOD 071-030-0011

### CONDITIONS

Given a sector of fire, an assistant gunner, and a MK 19 machine gun with feed throat assembly, MK64 gun mount, M3 tripod, and T&E mechanism.

### STANDARDS

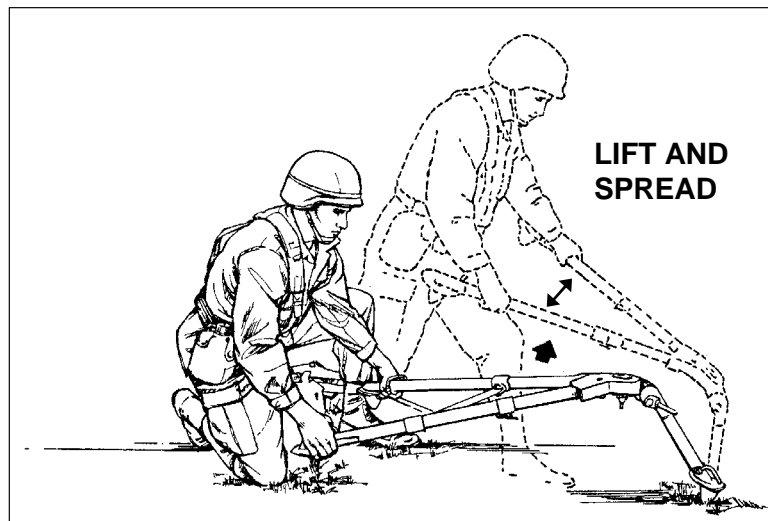
Ground mount the MK 19 machine gun on the M3 tripod without damage to equipment or injury to personnel.

### TRAINING AND EVALUATION Training Information Outline

#### WARNING

**A two-man lift is required for the MK 19 machine gun and each fully loaded M548 ammunition container.  
DO NOT try to lift either by yourself.**

1. Set up the M3 tripod.
  - a. Select a level and stable location and position the tripod so that the gun will be oriented toward the assigned sector of fire.
  - b. Open and lock the rear legs of the tripod in the open position ([Figure 1](#)).

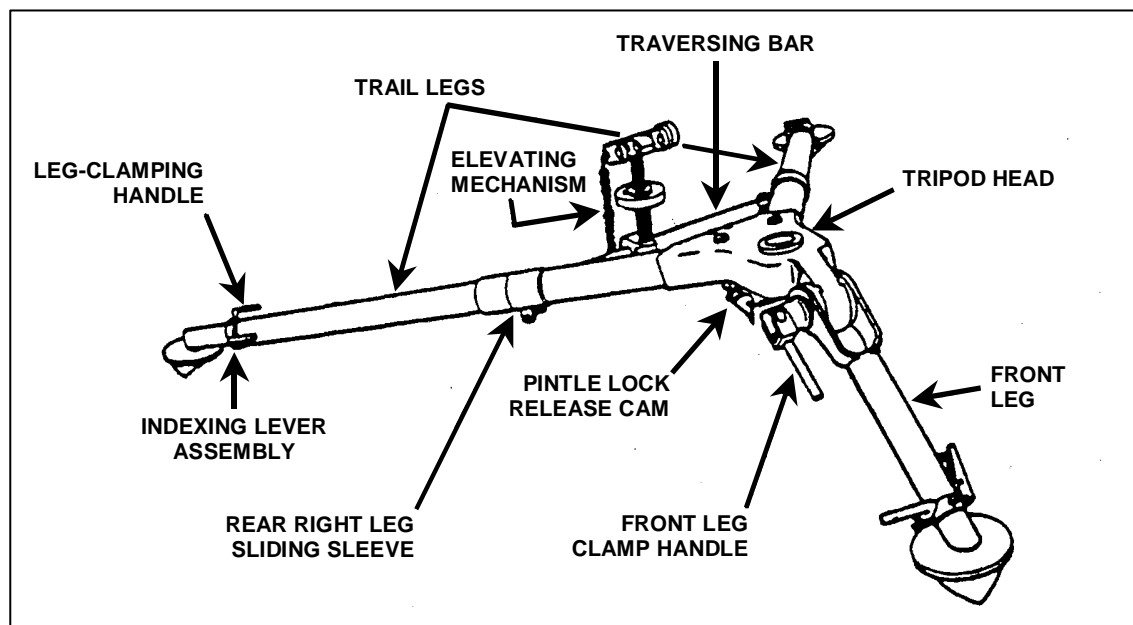


**Figure 1. Positioning the tripod.**

c. Open and adjust the front leg of the tripod so that it forms an angle of about 60 degrees to the ground. Stabilize the legs of the tripod by pushing the metal shoe of each leg into the ground, or sandbag each leg.

2. Attach the T&E mechanism

- a. Lock the T&E mechanism in the center of traversing bar ([Figure 2](#)).
- b. Rotate the elevation handwheel to the middle of the threaded shaft and position the traversing handwheel on the left side.



**Figure 2. M3 tripod.**

3. Attach MK64 gun mount.

- a. Lift the pintle lock release cam until it locks open.
- b. Place the MK64 gun mount pintle into the tripod ([Figure 3](#)) until it sits flush on the tripod head. Flip down the pintle lock on the tripod.
- c. Make sure the gun mount is locked into the tripod by lifting slightly on the gun mount.
- d. Disengage the stow pin ([Figure 4](#)) from the gun mount.
- e. Remove the quick release pin from the T&E mechanism. Align the holes in the T&E mechanism with the rear holes of the gun mount. Insert the quick release pin from the right side, and rotate the pin downward to the locked position ([Figure 5](#) and [Figure 6](#)).

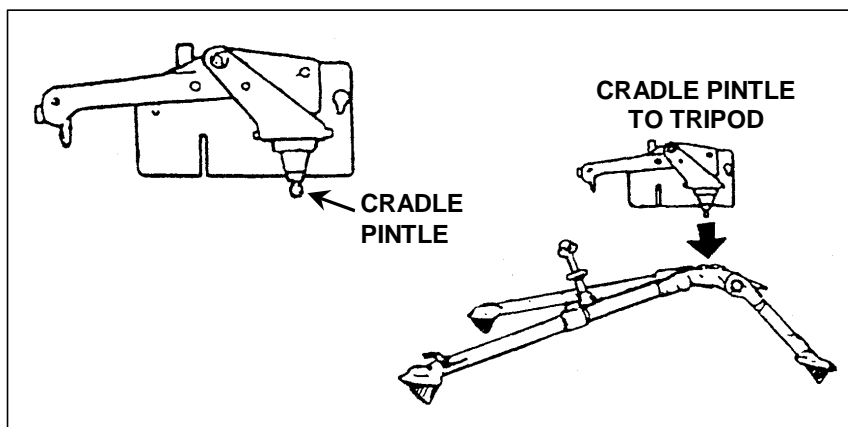


Figure 3. Insertion of pintle into pintle bushing.

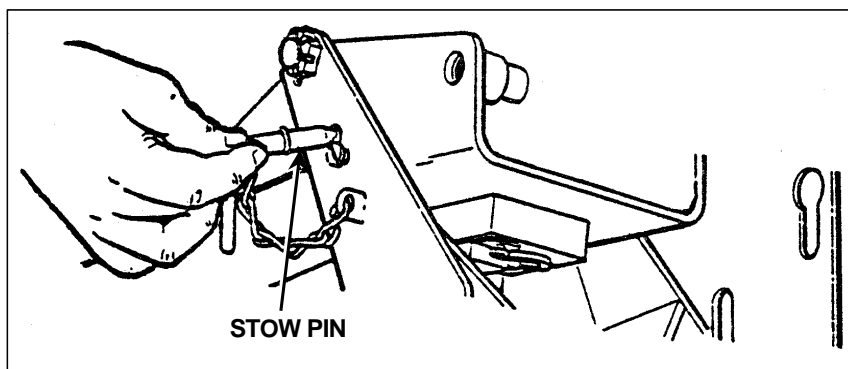


Figure 4. Disengagement of stow pin.

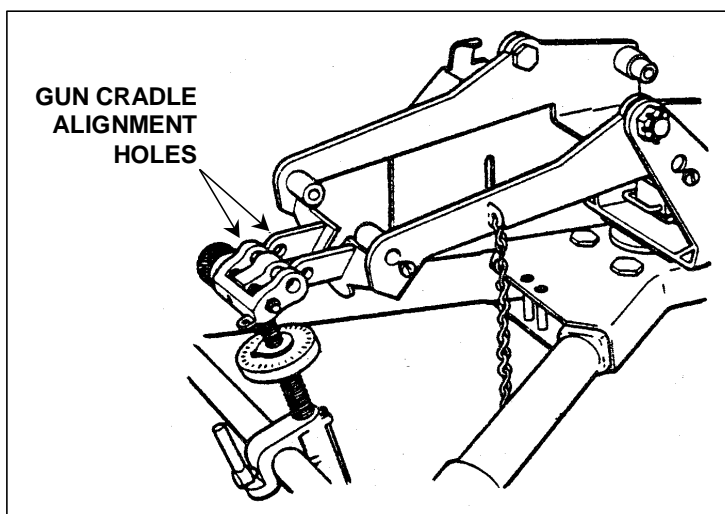
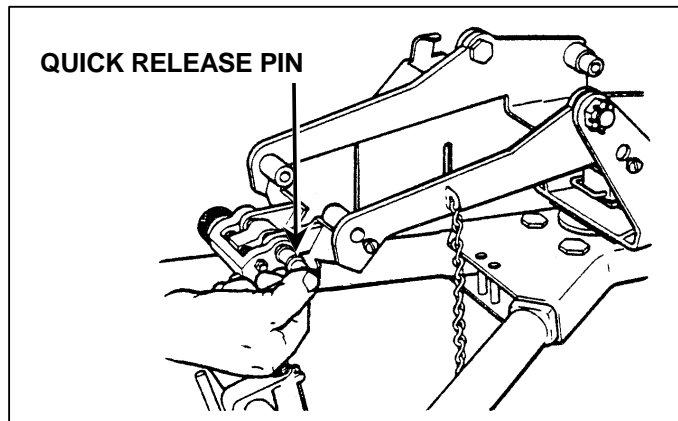
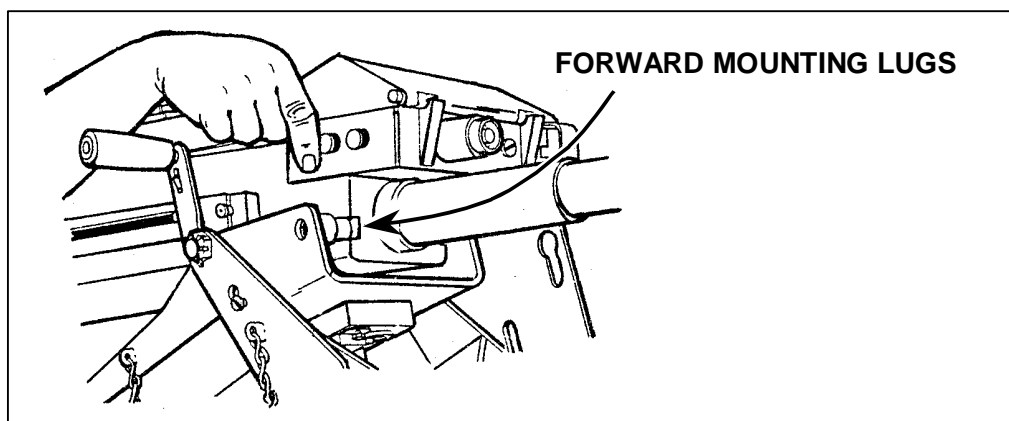


Figure 5. Alignment of gun cradle to T&E.



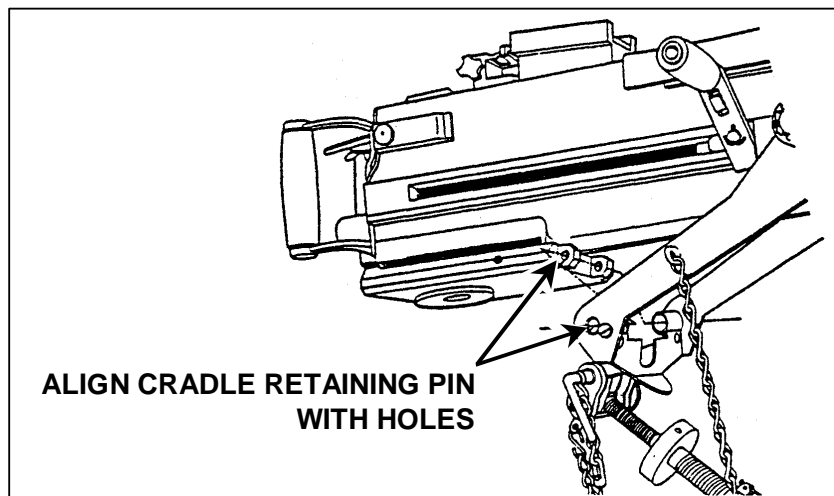
**Figure 6. Insertion of quick release pin.**

4. Install the MK 19 on the gun mount.
  - a. Lower the gun into the mount. Slide the gun's front grooves onto the mounting lugs (Figure 7).

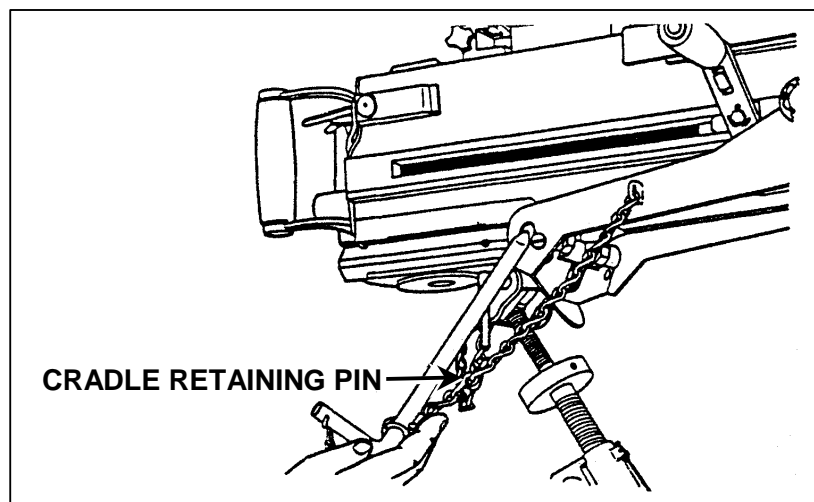


**Figure 7. Sliding of gun onto mounting lugs.**

- b. Align the rear mounting holes of the gun with the rear holes of the gun mount (Figure 8 and Figure 9). Insert the gun mount pin from the right side and rotate it downward to locked position.

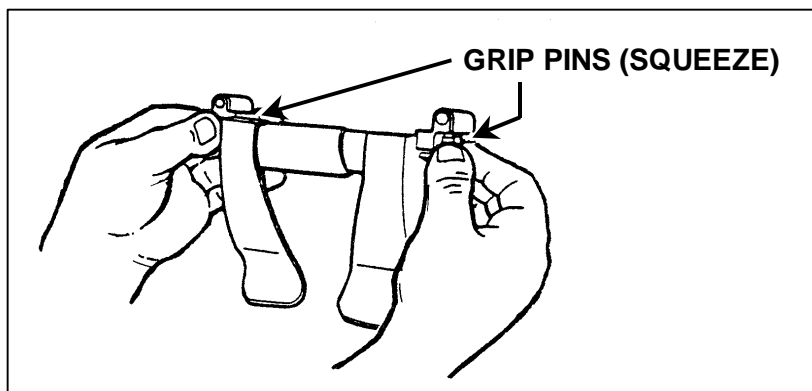


**Figure 8. Alignment of sear assembly, pin holes.**

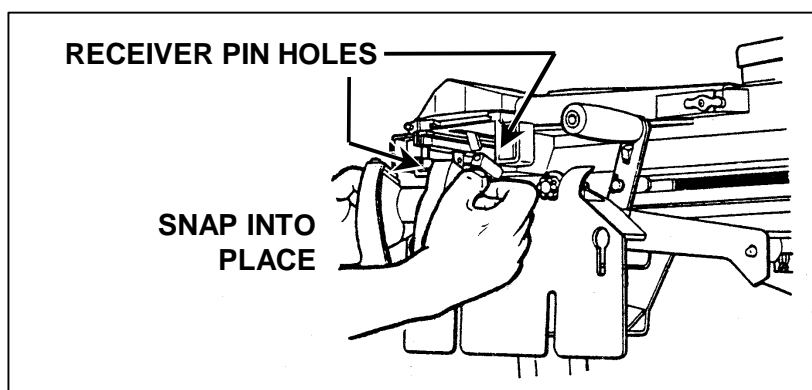


**Figure 9. Insertion of cradle retaining pin.**

5. Attach the feed throat assembly ([Figure 10](#) and [Figure 11](#)).
  - a. Squeeze the spring-loaded pins on the feed throat assembly.
  - b. Insert the feed throat into the forward left-hand slots of the receiver, and release the feed throat assembly pins.



**Figure 10. Gripping of pins on feed throat assembly.**



**Figure 11. Insertion of feed throat assembly.**

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide the soldier with equipment listed in task conditions.

*Brief Soldier:* Tell the soldier to mount the MK 19 onto the M3 tripod.

### **EVALUATION GUIDE**

#### **Performance Measures**

1. Set up the M3 tripod.
2. Attach the T&E mechanism on the left side.
3. Attach MK64 gun mount.

#### **Results**

P	F
P	F
P	F



**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
4. Install MK 19 on gun mount.	P	F
5. Attach feed throat assembly.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
TM 9-1010-230-10 FM 23-27	None

## **MOUNT A MK 19 MACHINE GUN ON A VEHICLE**

### **071-030-0009**

#### **CONDITIONS**

Given a cleared MK 19 machine gun; an assistant gunner; an MK64 gun mount; a pintle adapter assembly; a traversing and elevation (T&E) assembly installed in the pivot arm assembly; a feed throat assembly; a mounting assembly for an ammunition can bracket; two 9/16-inch open-ended wrenches; one 3/8-inch open-ended wrench; and a vehicle equipped with either an M4 pedestal mount, an M66 ring mount, or a HMMWV armament carrier ring pedestal.

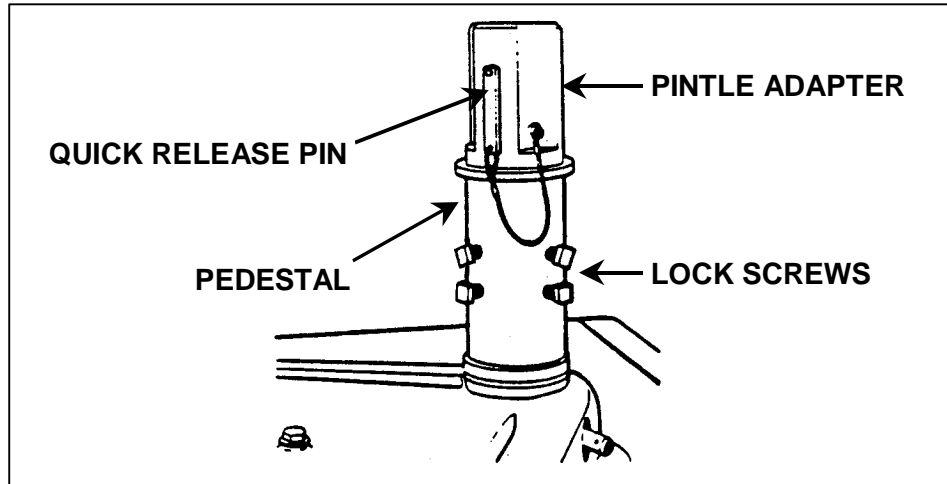
#### **STANDARDS**

Mount the MK 19 on a vehicle carrier correctly and without damage to equipment or injury to personnel.

#### **TRAINING AND EVALUATION**

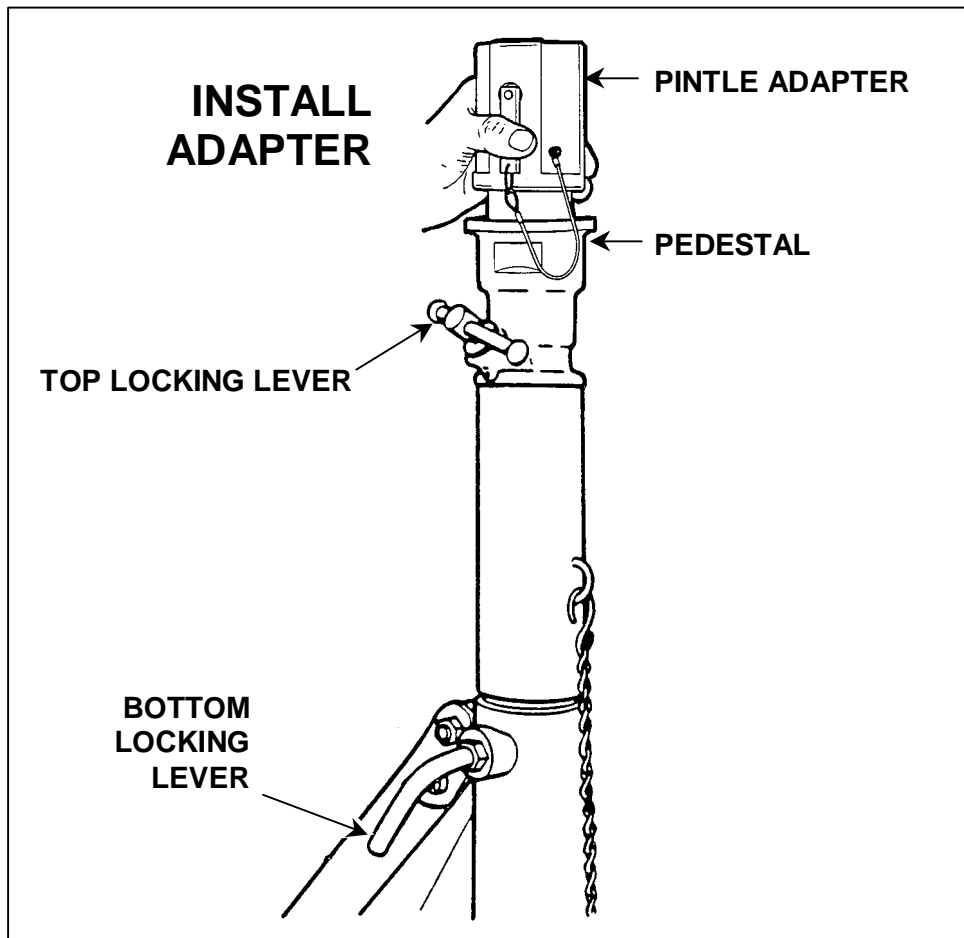
##### **Training Information Outline**

1. Install the pintle adapter.
  - a. HMMWV armament carrier ring pedestal ([Figure 1](#)).
    - (1) Using a 3/8-inch, open-ended wrench, loosen the HMMWV pedestal and the pintle adapter lock screws. Turn all four screws counterclockwise until the threaded ends are flush with the pedestal's inner wall.
    - (2) Insert the pintle adapter assembly into the HMMWV pedestal. Tighten the lock screws. Using a 3/8-inch, open-ended wrench, turn the screws clockwise to tighten them. Pull upward on the pintle adapter to make sure it is secure.
    - (3) Remove the pintle adapter quick release pin. Press in on the pin's quick release button, and pull the pin from the pintle adapter.



**Figure 1. Installation of pintle adapter on HMMWV armament carrier ring.**

- b. M4 pedestal ([Figure 2](#)).
  - (1) Loosen the lower pedestal-locking lever. Turn the upper pedestal until the upper locking lever is on same side as the lower pedestal-locking lever. Tighten the lower pedestal-locking lever.
  - (2) Loosen the upper pedestal locking lever.
  - (3) Insert the pintle adapter assembly into pedestal mount.
  - (4) Tighten the upper pedestal locking lever. Pull up on the pintle adapter assembly to make sure it is secure.
  - (5) Remove the pintle adapter quick release pin.



**Figure 2. Installation of pintle adapter on M4 pedestal.**

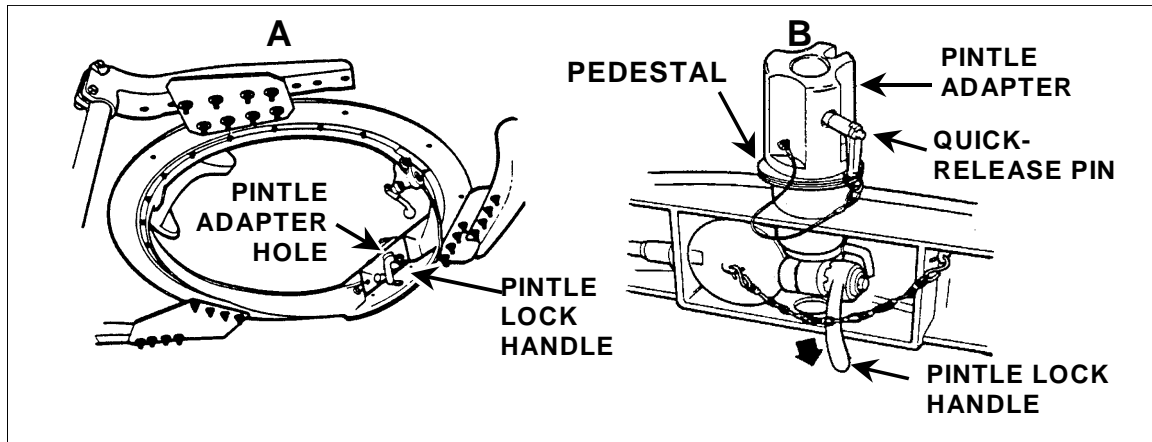
c. M66 ring mount ([A, Figure 3](#)).

(1) Stand inside the M66 ring facing the pintle adapter hole; rotate the pintle lock handle upward.

(2) Insert the pintle adapter assembly into the pedestal ([B, Figure 3](#)).

(3) Rotate the pintle lock handle downward to secure the pintle adapter. Pull up on the pintle adapter to make sure it is locked in place.

(4) Remove the pintle adapter quick release pin.

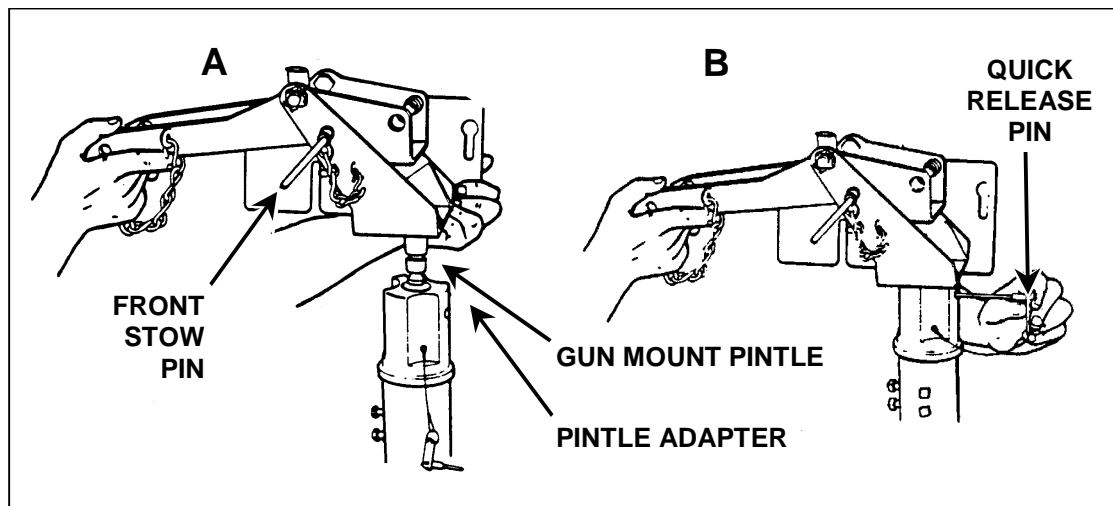


**Figure 3. Installation of pintle adapter on M66 ring mount.**

d. HMMWV Interchangeable Mount System (HIMS). Follow same procedures as for HMMWV armament carrier ring pedestal ([Task Step 1a](#)).

2. Install the MK64 gun mount ([Figure 4](#)).

- a. Insert the front stow pin.
- b. Insert the gun mount pintle into the top of the pintle adapter assembly.
- c. Press in on the pintle adapter quick release pin button, and insert the pin. Pull upward and twist the gun mount. It should be locked into the pintle adapter, but at the same time it should also traverse freely left and right.



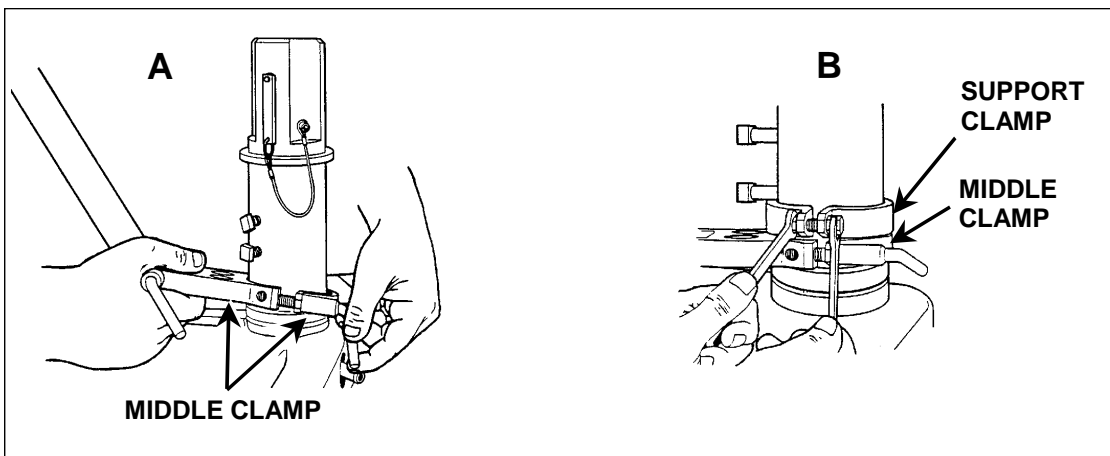
**Figure 4. Installation of the MK64 gun mount.**

3. Attach the T&E assembly ([A, Figure 5](#)).

- a. Separate the middle clamp on the T&E assembly. Remove the train lock handle by turning it counterclockwise. Use a 9/16-inch, open-ended wrench to remove the hex-head screw on the other side of the clamp.
- b. Attach the middle clamp to the HMMWV pedestal post.

(1) Assemble the middle clamp around the base of the pedestal, about 2 inches below the welded pin (B, Figure 5). Tighten the clamp by turning the train lock clockwise. Using a 9/16-inch wrench, tighten the screw on other side of clamp the same amount that you tightened the first screw.

(2) Attach two support clamps. Using 9/16-inch wrenches, attach one support clamp above and one below the already installed middle clamp. Tighten each screw two turns until snug.

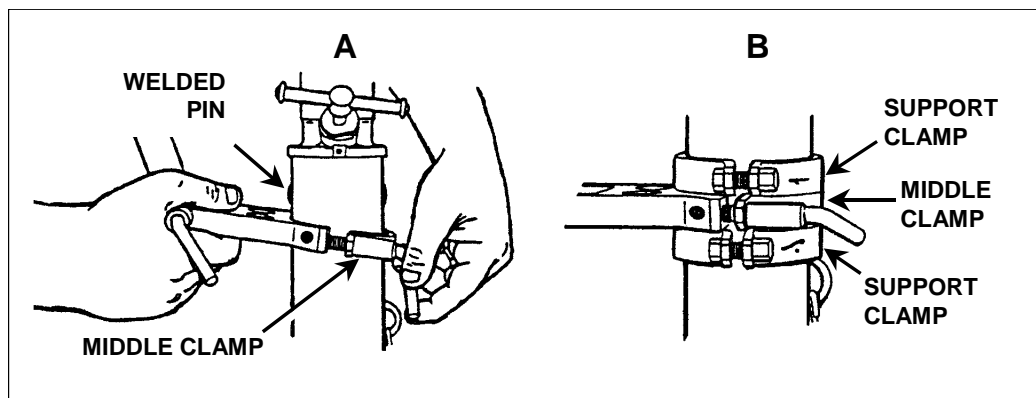


**Figure 5. Attachment of clamps to HMMWV armament pedestal carrier.**

c. Attach the middle clamp to the M4 pedestal (A, Figure 6).

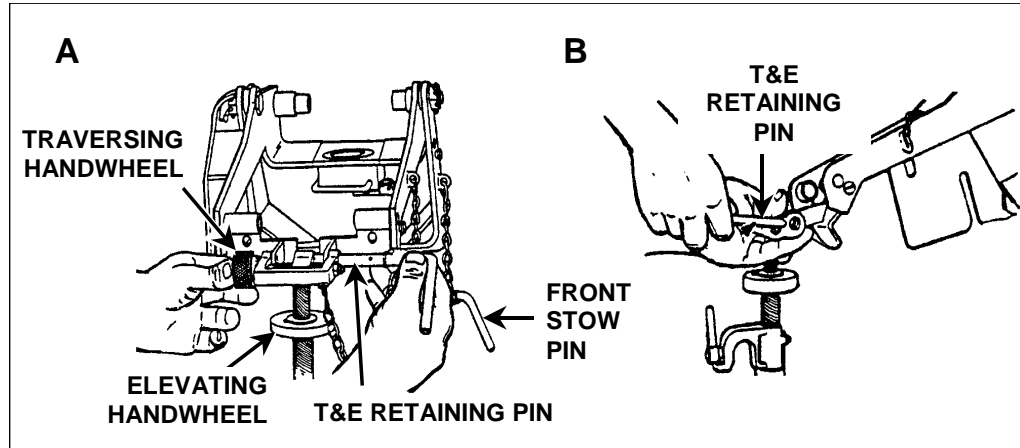
(1) Assemble the middle clamp around the pedestal, about 2 inches below the welded pin (B, Figure 6). Tighten the clamp by turning the train lock clockwise. Using 9/16 wrench, equally tighten the hex head screw on other side of clamp.

(2) Attach two support clamps. Using two 9/16 wrenches, attach one support clamp above and one below the already installed middle clamp. Tighten each screw two turns until snug.



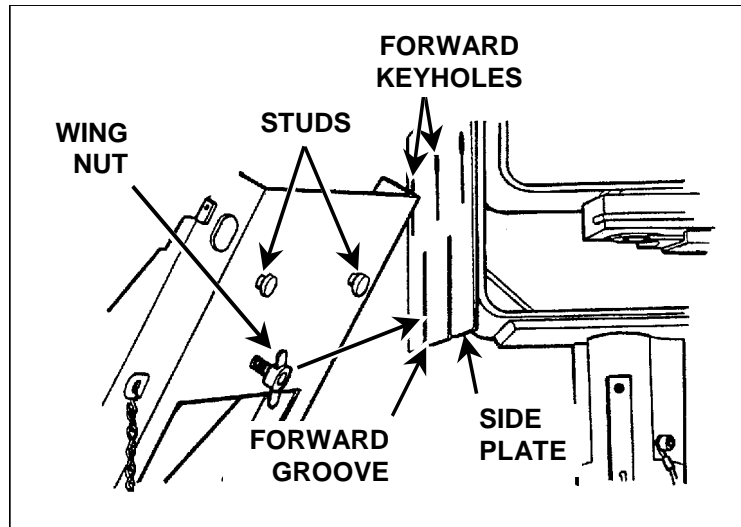
**Figure 6. Attachment of clamps to M4 pedestal.**

4. Attach the T&E assembly to the gun mount ([Figure 7](#)).
  - a. Remove the front stow pin from the gun mount.
  - b. Pull out the T&E assembly retaining pin.
  - c. Make sure the T&E elevating handwheel is set at 250 mils. Position the lock lever to the rear, and make sure the traversing handwheel is to the left.
  - d. To align the T&E elevating assembly holes with the lower rear holes in gun mount cradle, turn the elevating handwheel.
  - e. Insert the T&E retaining pin through the holes from the right side only. Rotate the locking pin to locked position.



**Figure 7. Attachment of T&E assembly to gun mount.**

5. Attach the ammunition can mounting bracket assembly ([Figure 8](#)).
  - a. Partially unscrew the wing nut on the bracket threaded stud. Align the wing nut on the threaded stud with the forward groove in the side plate of the gun mount. Slide the threaded stud upward into the forward groove, until the two welded pins seat in the two forward keyholes.
  - b. Slide the bracket downward in the slots. Reach behind the gun mount side plate, and tighten the wing nut. Check to make sure the assembly is securely locked into the side plate of the gun.



**Figure 8. Installation of ammunition can bracket.**

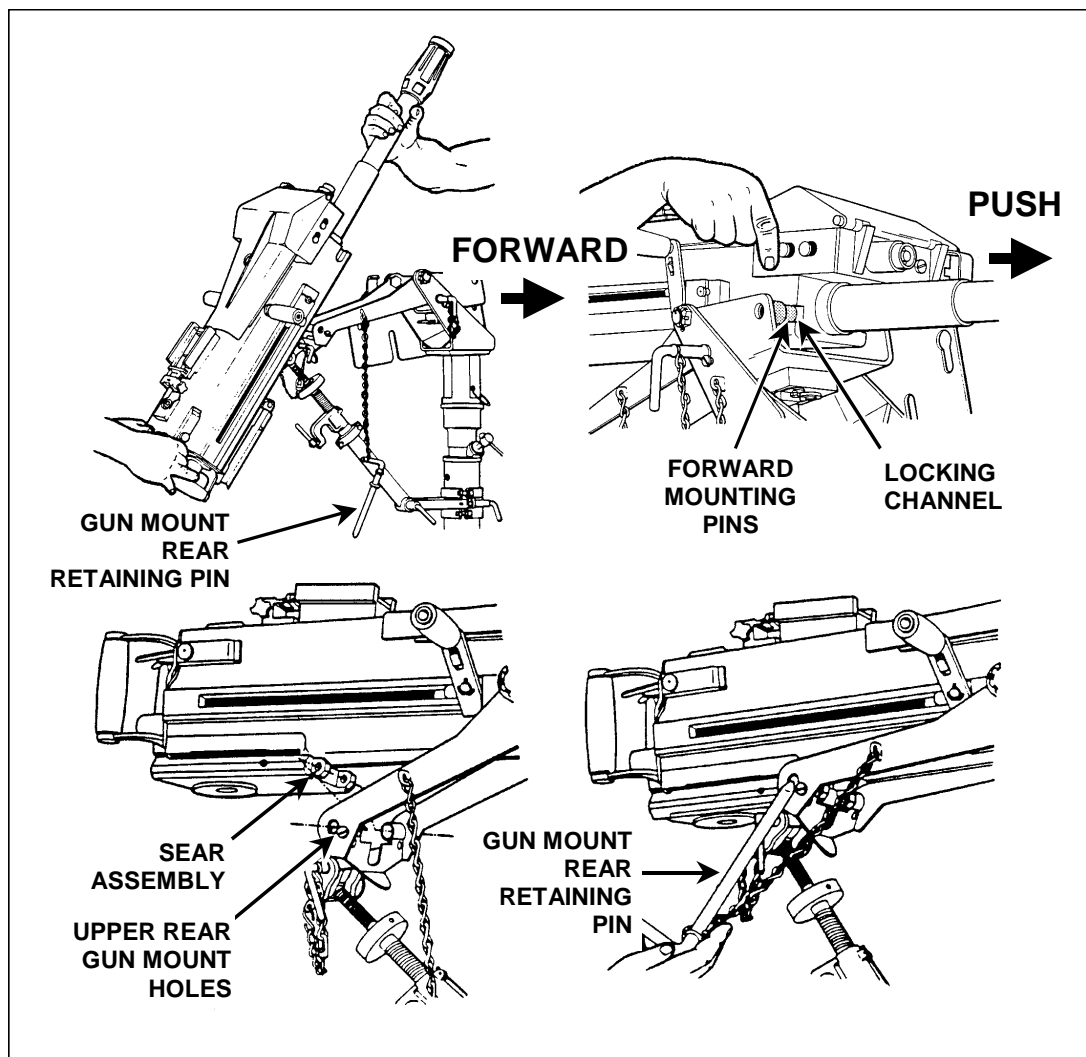
6. Install the MK 19 machine gun ([Figure 9](#)).
  - a. Remove the rear retaining pin from the gun mount.
  - b. With the help of the assistant gunner, lift the weapon onto the gun mount cradle, with the barrel pointing towards the forward end of the gun mount assembly.
  - c. Lock the front portion of the weapon into the gun mount cradle.
    - (1) Lower the muzzle slightly. Align the receiver locking channels with the two forward mounting pins on the gun mount cradle.
    - (2) To seat the mounting pins into the locking channels, push the weapon forward.
  - d. Lock the rear of the weapon to the gun mount cradle. Align the holes in the weapon sear assembly with the upper rear holes in the gun mount cradle. Insert the gun mount cradle rear retaining pin, and rotate the handle downward to the locked position.

### **WARNING**

**A two-man lift is required for the MK 19 machine gun *and* for each fully loaded M548 ammunition container.**

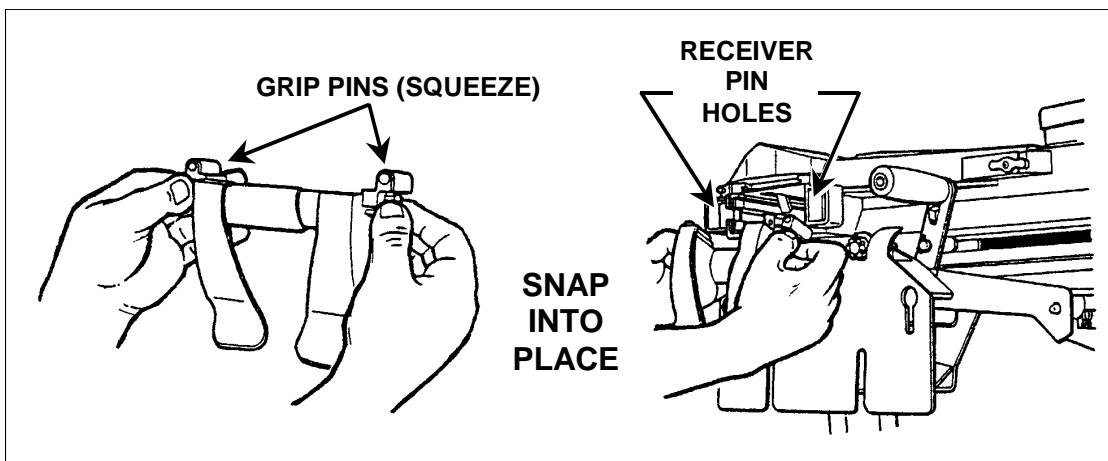
**DO NOT try to lift EITHER alone.**





**Figure 9. Installation of MK 19 on gun mount.**

7. Attach the feed throat assembly ([Figure 10](#)).
  - a. Squeeze together the spring-loaded grip pins on the feed throat assembly.
  - b. Insert the feed throat into the forward left-hand slots of the receiver. Release the pins. Check to make sure the assembly is secure.



**Figure 10. Attachment of the feed throat assembly.**

### EVALUATION PREPARATION

*Setup:* Provide the soldier with equipment listed in conditions (If the soldier is to mount the MK 19 on a HMMWV equipped with armament carrier ring, provide only one support clamp).

*Brief Soldier:* Tell the soldier to mount the MK 19 on the vehicle.

### EVALUATION GUIDE

Performance Measures	Results	
1. Install the pintle adapter.	P	F
2. Install the MK 64 gun mount.	P	F
3. Attach the T&E assembly.	P	F
4. Attach the T&E assembly to the gun mount.	P	F
5. Attach the ammunition can mounting bracket assembly.	P	F
6. Install the MK 19 machine gun.	P	F
7. Attach the feed throat assembly.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

FM 23-27

TM 9-1010-231-13&amp;P

TM 9-1010-230-10

**Related**

None

**PERFORM A FUNCTION CHECK ON A  
MK 19 MACHINE GUN  
071-030-0007**

**CONDITIONS**

Given a cleared MK 19 machine gun mounted on an M3 tripod or vehicle carrier.

**STANDARDS**

Conduct an operational check of the MK 19 machine gun to make sure it is correctly assembled and functions properly.

**TRAINING AND EVALUATION**  
**Training Information Outline**

**WARNING**

**Before performing any procedure, make sure the weapon is clear of ammunition.**

1. Check the functioning of the safety switch.
  - a. With the cover closed, place safety switch on safe (S).
  - b. Pull the bolt to rear, push charger handles to forward position, and rotate handles up.
  - c. Press the trigger. Bolt should not go forward.
  - d. Place the safety switch on fire (F) position.
  - e. Press the trigger. Bolt should spring forward.
  - f. Place the safety switch on safe (S) and leave the bolt in forward position.
2. Inspect the interior of receiver assembly for missing or damaged parts.
  - a. Open the top cover.
  - b. Touch the firing pin. If it is not protruding, recharge and release the bolt spring under pressure.
  - c. Inspect the bolt face to make sure it is not worn, dirty, pitted, corroded, or in need of lubrication.

**WARNING**

**Do not allow the top cover to slam shut from the raised position. Doing so could injure your hand or damage the equipment.**

3. Check the feed slide assembly and feeder.
  - a. Move the secondary drive lever back and forth. The feed slide assembly should move freely.
  - b. Press the feed pawls to check for spring pressure.
  - c. Inspect the link guide for roughness and galling.

**NOTE:** Before closing the top cover, always make sure that—

- The secondary drive lever is engaged with the feed slide pin.
- The feed slide assembly is to the left
- The bolt is forward.
- Never try to force the top cover closed. Doing so could damage the equipment.

- d. Close and latch the top cover.

4. If you find any deficiencies that you cannot correct, the MK 19 is unserviceable. Report the deficiencies to your supervisor.

## EVALUATION PREPARATION

*Setup:* At the test site, provide the soldier with the equipment listed in task conditions.

*Brief Soldier:* Tell the soldier to perform a function check to determine if the MK 19 machine gun functions properly.

## EVALUATION GUIDE

Performance Measures	Results	
1. Check functioning of safety switch.	P	F
2. Inspect interior of receiver assembly for missing or damaged parts.	P	F
3. Check feed slide assembly and feeder.	P	F
4. Report deficiencies to supervisor.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

**Required**  
TM 9-1010-230-10

**Related**  
None

## **LOAD A MK 19 MACHINE GUN**

### **071-030-0005**

#### **CONDITIONS**

Given a can of linked 40-mm grenade ammunition and a cleared MK 19 machine gun mounted on an M3 tripod or on a vehicle. (If firing from a vehicle, ammunition can bracket will be attached to the gun mount.)

#### **STANDARDS**

Load linked ammunition through feed throat into feeder so that when cover is closed, the round is straight and firmly seated against the bolt and the ammunition will feed correctly.

#### **TRAINING AND EVALUATION**

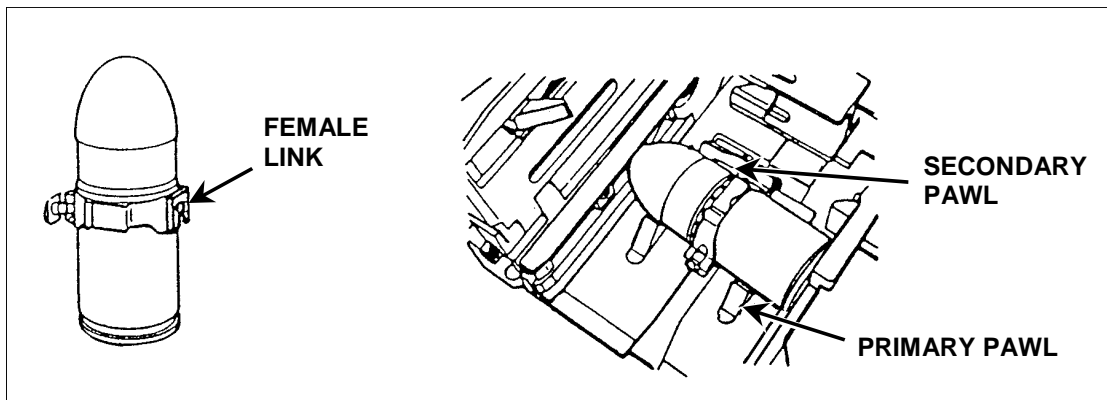
##### **Training Information Outline**

1. Make sure the chamber is empty, the bolt is in the forward position, and the charger handles are in the up (lock) position.
2. Make sure the safety switch is in the safe (S) position.

#### **WARNING**

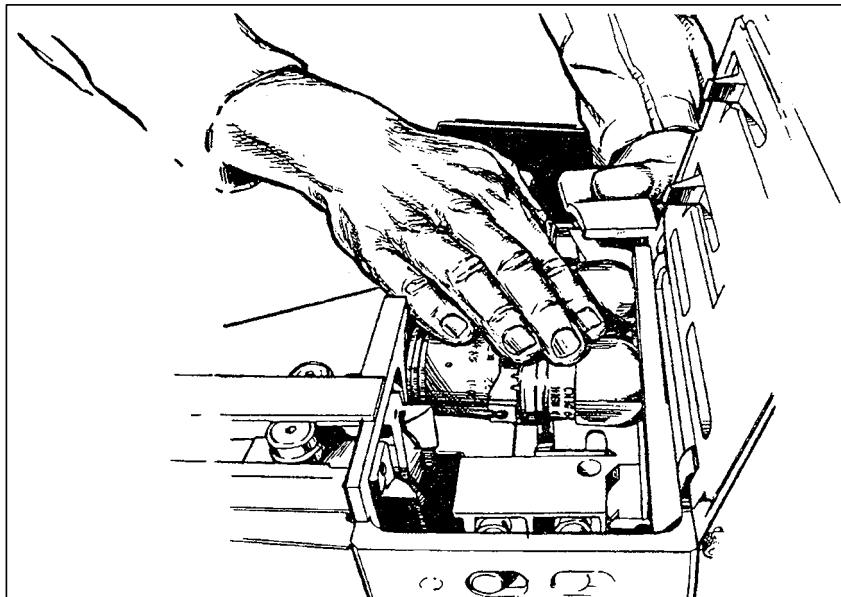
**Do not let the top cover slam shut from the open position. Injury to personnel or damage to equipment could result.**

3. Insert the first round.
  - a. Open the top cover and insert the first round through the feed throat into the feeder, link opening first ([Figure 1](#)).



**Figure 1. Insertion of first round through feed throat.**

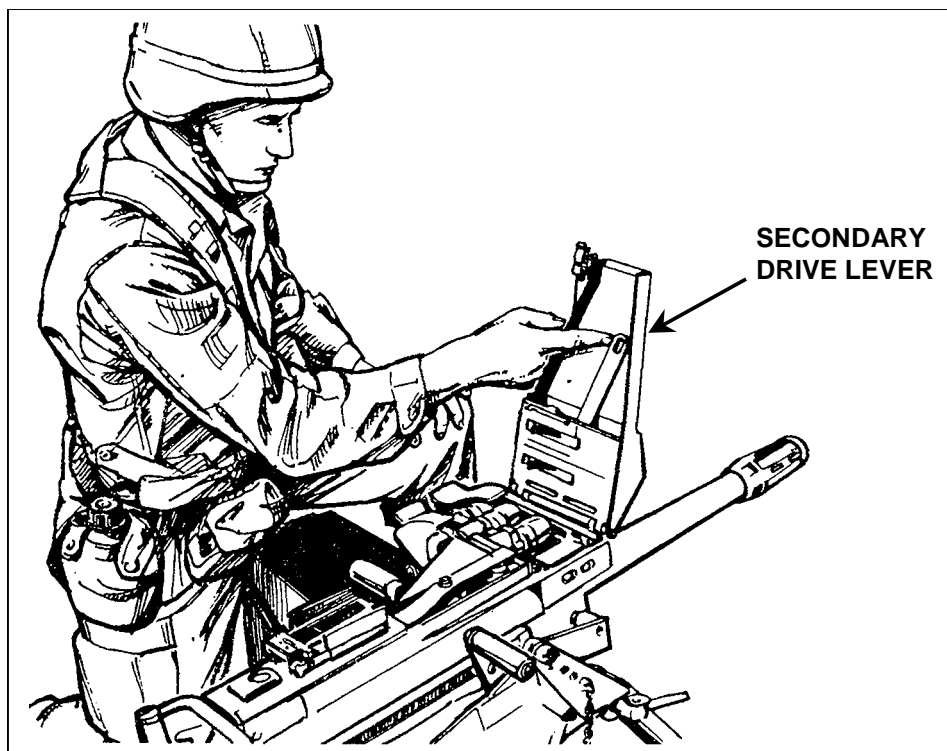
b. Push or slide the round across the first set of feeder pawls, making sure the round is straight and firmly seated against the bolt ([Figure 2](#)).



**Figure 2. Pushing round across feeder pawls.**

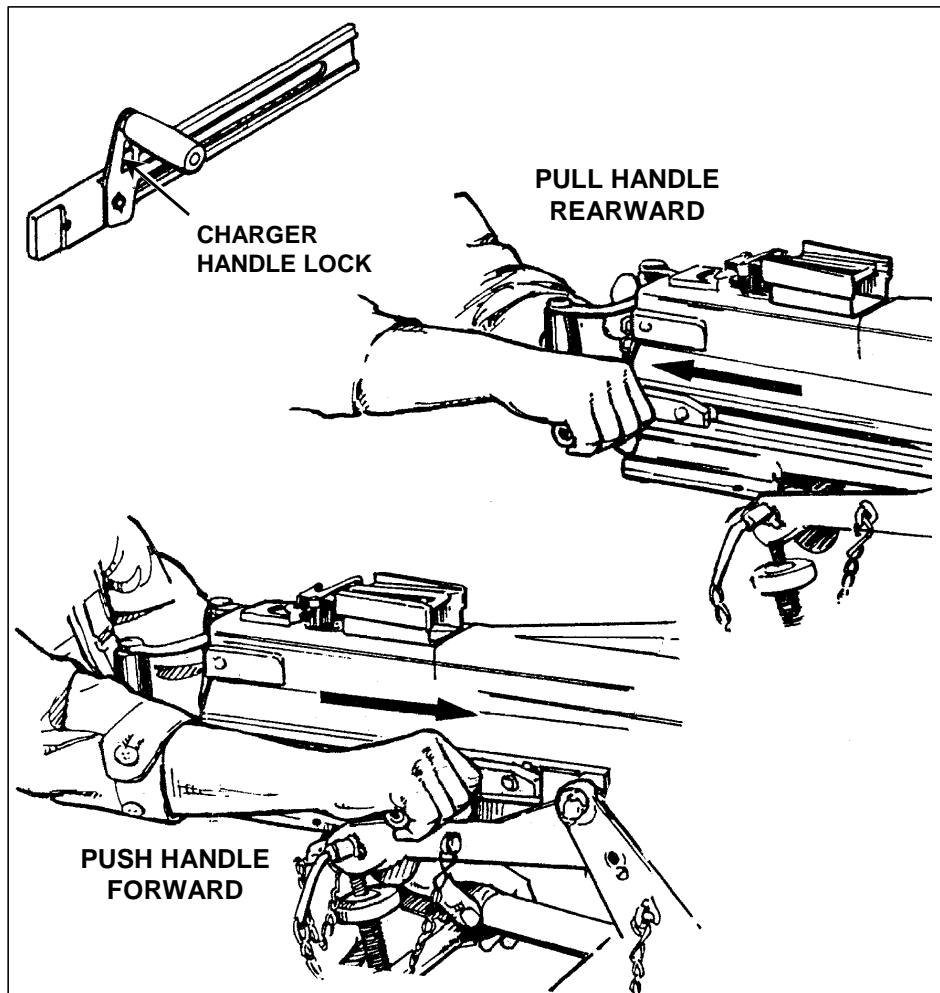
c. Index the feed slide assembly to the left and close the top cover ([Figure 3](#)).





**Figure 3. Indexing the feed slide assembly.**

4. Charge the weapon ([Figure 4](#)).
  - a. Grasp charger handles palms down.
  - b. Press charger handle locks and rotate charger handles down.
  - c. Pull charger handles sharply to the rear until the bolt sears.
  - d. Push charger handles forward and rotate them up into the lock position.



**Figure 4. Charging the MK 19 machine gun.**

5. Load the first round.
  - a. Place safety switch in fire (F) position and press trigger.

**NOTE:** Bolt will move forward and load the first round on the bolt-face (half load).

- b. Rotate charger handles down and pull them sharply to the rear until the bolt sears. This pulls the bolt with the loaded round into position for firing (full load).
    - c. Place safety switch in safe (S) position.
    - d. Push the chargers forward and rotate the charger handles up into the lock position. The weapon is fully loaded.
    - e. Leave safety switch on safe (S) position until ready to fire.

**WARNING**

**For firing, charger handles must be FORWARD and UP. Keep your weapon pointed downrange and the line of fire clear of objects.**

**EVALUATION PREPARATION**

*Setup:* Provide the soldier with the equipment listed in conditions.

*Brief Soldier:* Tell the soldier to load the MK 19 according to proper procedures.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Make sure the chamber is empty, the bolt is forward, and the charger handles are in the lock position.	P	F
2. Make sure the safety switch is in the safe (S) position.	P	F
3. Insert the first round.	P	F
a. Open the top cover and insert the first round through the feed throat and into the feeder, link opening first.		
b. Push or slide the round across the first set of feeder pawls, making sure the round is straight and firmly seated against the bolt.		
c. Index the feed slide assembly to the left and close the top cover.		
4. Charge the weapon.	P	F
a. Grasp the charger handles palms down.		
b. Press the charger handle locks and rotate charger handles down.		
c. Pull charger handles sharply to the rear until the bolt sears.		
d. Push charger handles forward and rotate them up into the lock position.		

**EVALUATION GUIDE****Performance Measures****Results**

5. Load the first round.
- a. Place safety switch on the fire (F) position and press the trigger.
  - b. Rotate charger handles down and pull them sharply to the rear until the bolt sears.
  - c. Place safety switch on the safe (S) position.
  - d. Push chargers forward and rotate the charger handles up into the locked position.
  - e. Leave safety switch in the safe (S) position until ready to fire.

P      F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

FM 23-27  
TM 9-1010-230-10

**Related**

None

## ZERO A MK 19 MACHINE GUN 071-030-0003

### CONDITIONS

Given a MK 19 machine gun, a MK 64 gun cradle, a zeroed T&E assembly mounted on a vehicle or M3 tripod, a stationary target located at a known range (400 meters) from the firing position, and linked 40-mm grenade ammunition.

### STANDARDS

Adjust the sights on a MK 19 machine gun so that a correct sight picture will cause a fired round to impact the target at the point of aim.

### TRAINING AND EVALUATION Training Information Outline

1. Prepare the sights for zeroing ([Figure 1](#)).
  - a. Press the plunger to release the sight frame. Raise the sight frame until it locks into the “up” position.
  - b. Loosen the retainer lock nut. Push in on the lock nut. Move the rear sight slide to the meter mark that corresponds to the distance to the target (400 meters).
  - c. Tighten the retainer lock nut.
  - d. Set the windage knob at the zero index line.

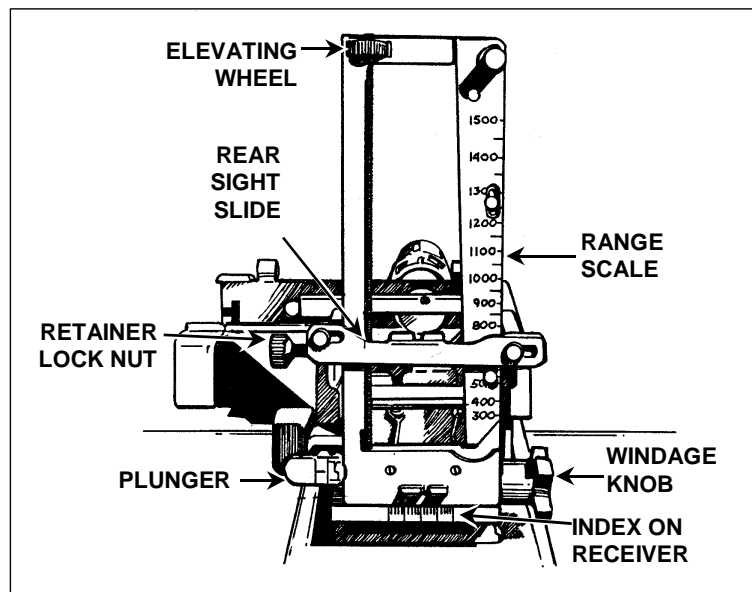


Figure 1. MK 19 machine gun sights.

2. Assume a firing position.
3. Align the sights on the base of the target using the T&E mechanism.
4. Fire a single round. Spot the impact of the round. If the round is on target, fire another short burst to confirm the zero. If the round is not on target, go to Step 5.
5. Adjust for a round that is not on target.
  - a. Elevation.
    - (1) If the round is short, turn the knob of the elevating wheel clockwise to move the impact of the round up onto the target.
    - (2) If the round is long, turn the knob of the elevating wheel counterclockwise to move the impact of the round down onto the target.

<p><b>EXAMPLE:</b> If the rounds impact 10 mils short, turn the elevation knob 10 mils up (clockwise). Adjust the gun back on target using the T&amp;E before the next round is fired. Fire a second round. If the adjustments are correct, the second round should be on target. If not, repeat. You may have to make bold adjustments.</p>
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- b. Windage.
      - (1) If the round is to the right, adjust the sight to the left by turning the windage knob counterclockwise to move the impact of the round onto the target.
      - (2) If the round is to the left, adjust the sight to the right by turning the windage knob clockwise to move the impact of the round onto the target.

**NOTE:** Loosen the traversing slide lock lever to adjust the gun back onto the target. Before you fire the next round, retighten the traversing slide lock lever.

6. Once you have zeroed the gun, align the range plate scale at the exact range of the zero and tighten it.

### EVALUATION PREPARATION

*Setup:* Evaluate this task during live firing of Table 1, Task 3, IAW FM 23-27. Provide the soldier with equipment required to fire Table 1.

*Brief Soldier:* Tell the soldier that he will be evaluated on his ability to fire Table 1, Task 3. Brief him on the task conditions, standards, and ammunition.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Prepare sights for zeroing IAW Step 1.	P	F
2. Assume a firing position.	P	F
3. Align sights on the base of the target.	P	F
4. Fire a single round and observe the impact of the round.	P	F
5. Adjust elevation and windage to zero weapon.	P	F
6. Align and tighten the range plate scale after zeroing.	P	F

**FEEDBACK**

Score the soldier GO if all steps are passed. Score the soldier NO-GO if any steps are failed. If the soldier fails any steps, show what was done wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
FM 23-14	None
FM 23-27	
TM 9-1005-201-10	

## ENGAGE TARGETS WITH A MK 19 MACHINE GUN 071-030-0004

### CONDITIONS

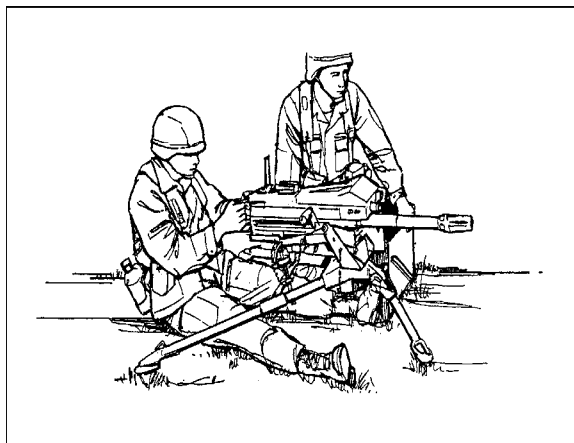
Given a zeroed MK 19 machine gun (tripod or cupola mounted), linked 40-mm grenade ammunition, and a sector of fire with engageable targets.

### STANDARDS

Fire the MK 19 machine gun to engage targets in your assigned sector of fire. Apply correct machine gun target engagement techniques so that each target is covered with fire.

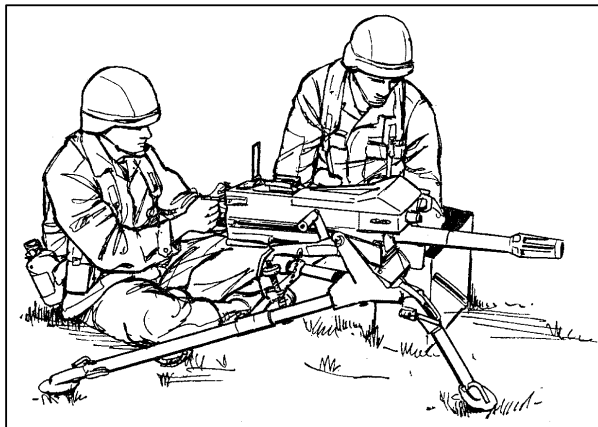
### TRAINING AND EVALUATION Training Information Outline

1. Assume a suitable firing position. Based on your situation, select a firing position that will allow you to observe and engage targets yet minimize your exposure to enemy fire.
  - a. Seated firing positions. Sit directly behind the weapon between the trail legs of the tripod.
    - (1) Legs extended. Extend your legs under the tripod ([Figure 1](#)).
    - (2) Legs crossed. Cross your legs and place your elbows on the inside of your thighs for support when firing the weapon ([Figure 2](#)).
    - (3) Legs braced. Extend your legs, brace them on the trail legs of the tripod, and place your elbows on the inside of your thighs for support ([Figure 1](#), [Figure 2](#), and [Figure 3](#)).
  - b. Kneeling position. Kneel and grasp the control grips with your thumbs on the trigger ([Figure 4](#)).
  - c. Standing position for gun mounted on a vehicle pedestal ([Figure 5](#)).

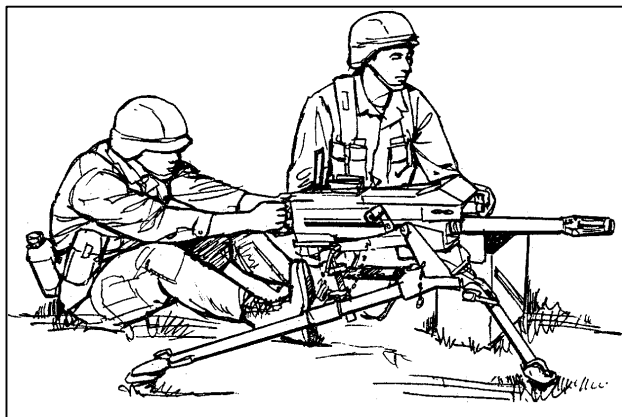


**Figure 1. Seated firing position, legs extended.**

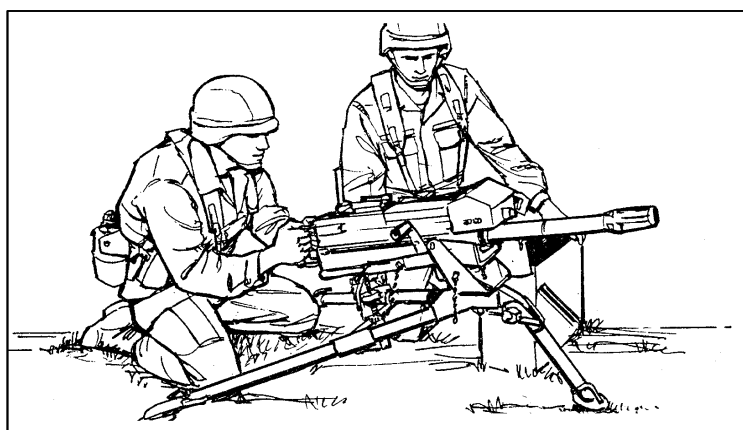




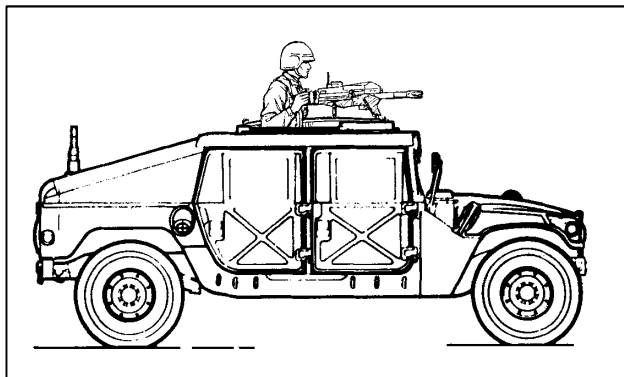
**Figure 2. Seated firing position, legs crossed.**



**Figure 3. Seated firing position, legs braced.**

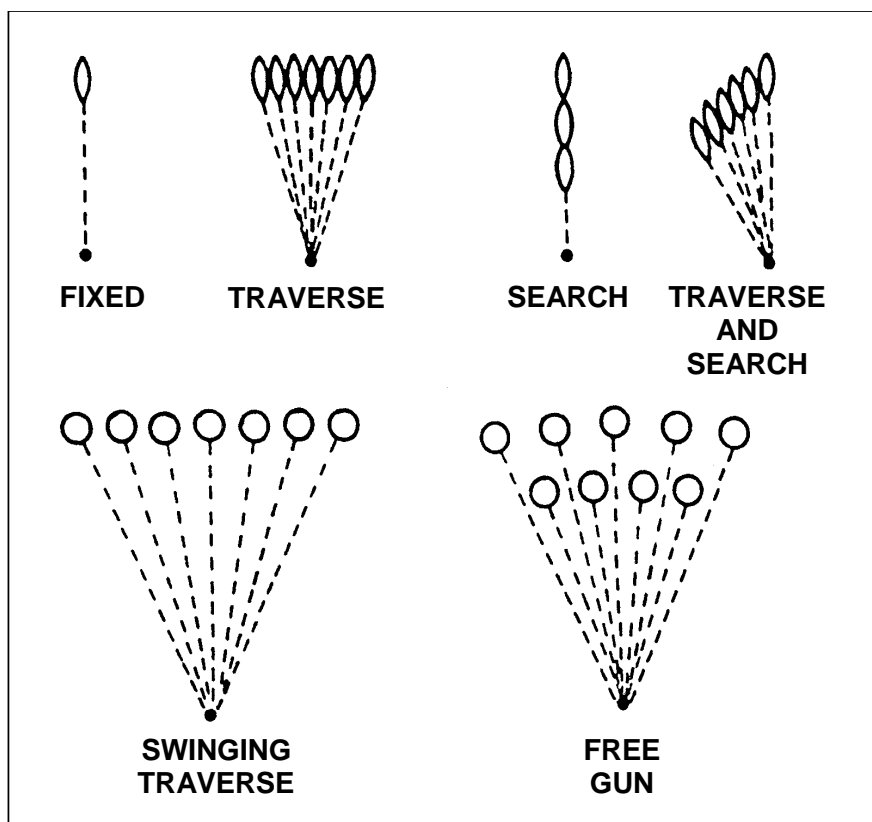


**Figure 4. Kneeling position.**



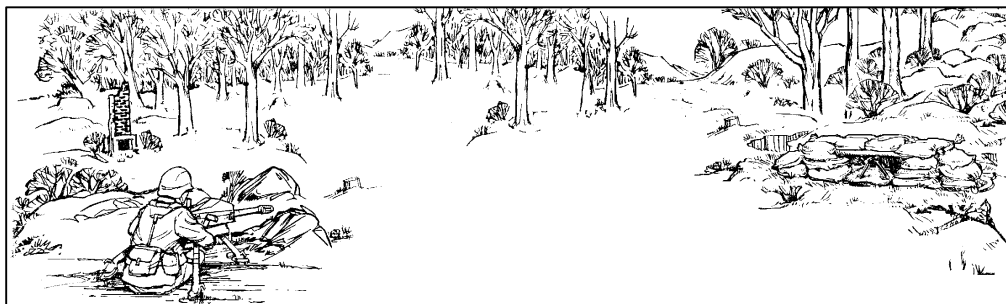
**Figure 5. Standing position for mounted gun.**

2. Acquire the target using correct sight alignment.
3. Apply correct engagement technique based on target types.
  - a. Use correct gun manipulation technique ([Figure 6](#)).
    - (1) Fixed fire. This is fire delivered against a point target. Only one aiming point is necessary with little or no manipulation of the gun.
    - (2) Traversing fire. This is fire distributed against a wide target requiring successive changes in direction of gun. This means using the T&E mechanism to traverse the gun left or right to distribute fire laterally.
    - (3) Searching fire. This is fire delivered against a deep target or a linear target with depth in width by successive changes in elevation. This means using the T&E mechanism to move the muzzle of the weapon up or down to distribute fire in depth.
    - (4) Traversing and searching fire. This is fire delivered in width and depth by successive changes in direction and elevation. It is employed against a target whose long axis is oblique to the direction of fire.
    - (5) Swinging traverse. This is fire delivered against targets that require major changes in direction but little or no change in elevation. Loosen the traversing slide lock enough to swing the gun laterally.
    - (6) Free gun. This is fire delivered against moving targets that must be rapidly engaged with fast changes in direction and elevation. To fire free gun, remove the T&E mechanism.



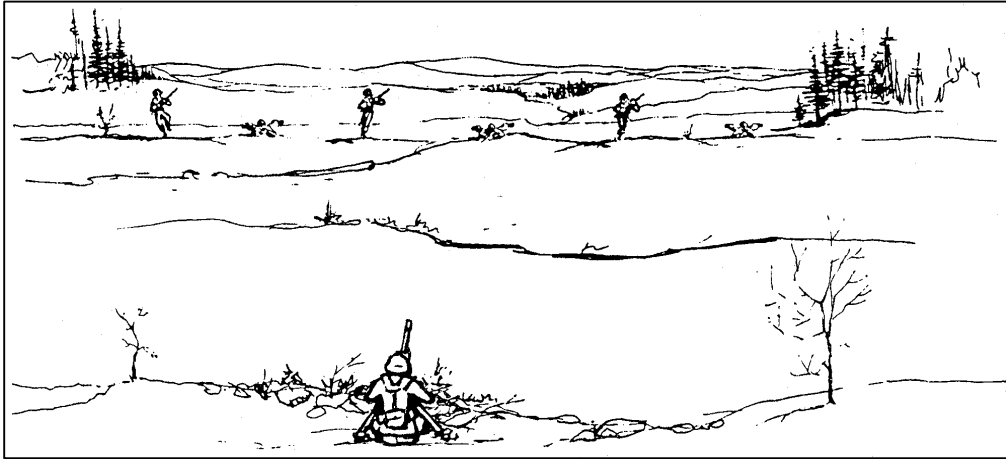
**Figure 6. Techniques of fire with respect to the MK 19.**

- b. Use correct application of fire to engage specific targets.
- (1) Point target. Engage point targets with fixed fire using a single aiming point (Figure 7).



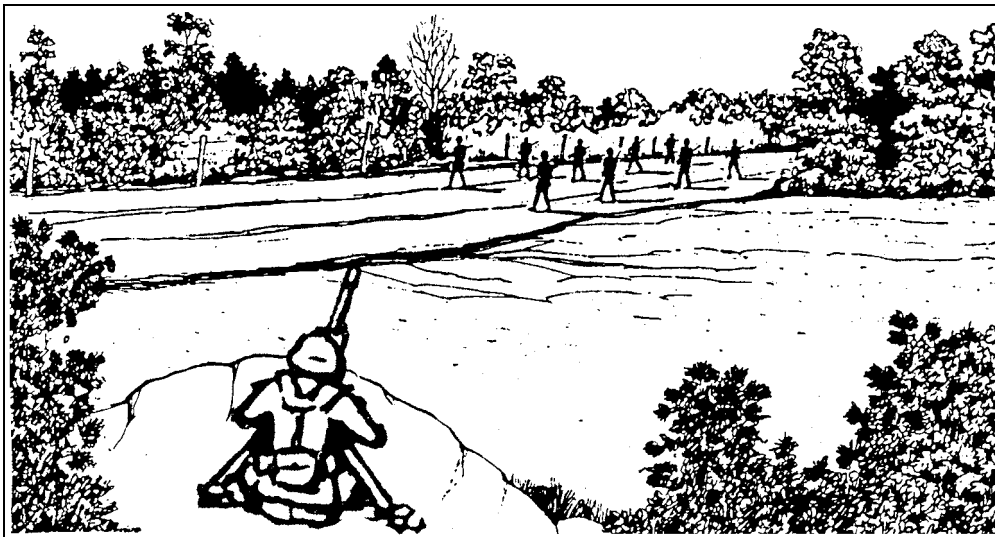
**Figure 7. Point target.**

- (2) Linear target. Initially aim just outside of either flank and fire. Traverse fire back and forth from flank to flank, covering the entire target area (Figure 8).



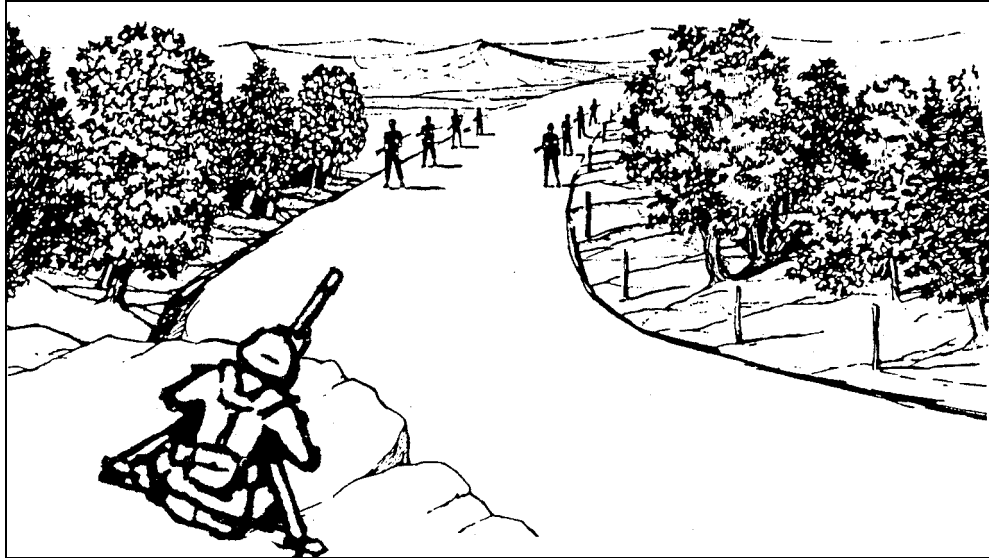
**Figure 8. Linear target.**

(3) Linear target with depth. Initially aim at the near flank with range set to the midpoint of the target unless another portion of the target is more critical or presents a greater threat. Fire on the near flank, then traverse and search back and forth, covering the entire target ([Figure 9](#)).



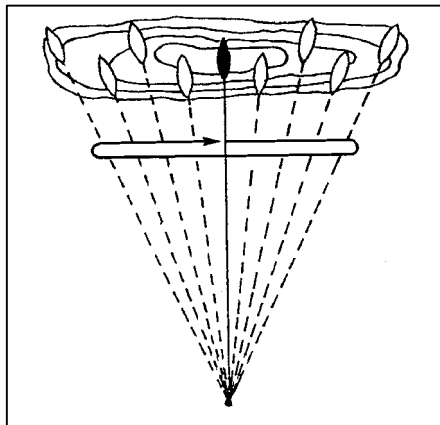
**Figure 9. Linear target with depth.**

(4) Deep target. Initially aim at the end of the target closest to the gun, unless another portion of the target is more critical or presents a greater threat (auto rifleman). Fire and search up the far end and back again repeatedly ([Figure 10](#)).



**Figure 10. Deep target.**

(5) Area target. Initially aim at the midpoint of the target area. Traverse and search to either flank, then traverse and search to the opposite flank (Figure 11).



**Figure 11. Engagement of area targets, single gun.**

4. Use observation of fire and adjusted aiming point to place effective fire on the target.
  - a. Observation of fire. Observe the strike of the rounds in relation to the target; adjust elevation and direction needed to move the center of impact onto the target.

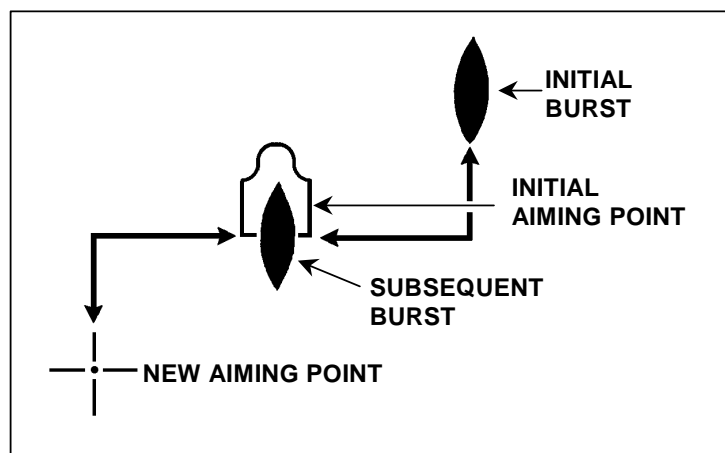
**NOTE:** This does not call for use of the sights.

**EXAMPLE:** Suppose you fire at a target 500 meters away. The rounds impact 20 meters short and 50 meters right. To manipulate the gun onto the target, use the traversing and elevating mechanism handwheels to move the muzzle left and up the proper number of clicks.

b. Adjusted aiming point. Use this method to quickly adjust fires without making a sight or T&E adjustment (Figure 12).

(1) If the initial burst misses the target, rapidly select a new aiming point the same distance from the center of impact of the initial burst but in the opposite direction.

(2) Lay the gun on that aiming point and fire.



**Figure 12. Adjusted aiming point method.**

5. Fire on the targets until they are destroyed or until you receive an order to cease fire.

## EVALUATION PREPARATION

*Setup:* Evaluate this task on a live-fire range designed for 40-mm machine gun firing. For a tripod mounted MK 19, tell the soldier to fire Table 2, Tasks 4 through 8, FM 23-27, Appendix C. For a vehicle-mounted MK 19, tell the soldier to fire Table 3, Tasks 2 through 5, FM 23-27, Appendix C.

*Brief Soldier:* Tell the soldier to perform the tasks outlined in Appendix C, FM 23-27. Brief him on the task conditions, standards, and ammunitions. Tell him he will be evaluated on his ability to apply correct target engagement techniques and place effective fire on targets.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Assume a suitable firing position.	P	F
2. Apply correct engagement technique based on target type. a. Use correct gun manipulation technique. b. Use correct application of fire to engage specific targets.	P	F
3. Place effective fire on targets (score a minimum of 84 points).	P	F
4. Use correct application of fire to engage specific targets.	P	F
5. Use observation of fire and adjust aiming point to place effective fire on the target.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
FM 23-27	None

## **CORRECT MALFUNCTIONS OF A MK 19 MACHINE GUN 071-030-0008**

### **CONDITIONS**

Given a loaded MK 19 machine gun mounted on an M3 tripod or vehicle, linked 40-mm grenade ammunition, a caliber .50 cleaning rod, a bore obstruction device (BOD), an assistant gunner, rifle bore cleaner (RBC), lubricating oils (LSA and either LSAT or LAW), grease (GMD), cleaning solvent (PD680), wiping rags, cloth (abrasive crocus), cleaning rod assembly, small arms cleaning brushes, and one of the following situations: the weapon has failed to fire; the weapon is firing sluggishly; or the weapon has uncontrolled fire (continues to fire after the trigger is released).

### **STANDARDS**

Take immediate action on a MK 19 machine gun that has failed to fire without identifying the cause of the malfunction. If immediate action is unsuccessful, perform remedial action to identify the cause of the malfunction. Take immediate action to secure a runaway MK 19 machine gun; then take remedial action to eliminate the malfunction. Take corrective action for a MK 19 machine gun that is firing sluggishly.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Apply immediate action when the weapon fails to fire (during peacetime and during training).

**NOTE:** Clear all nonessential personnel away from the gun position.



**DANGER**

1. IF ANYTHING UNUSUAL OCCURS DURING FIRING (INCLUDING SHORT RECOIL, OUT OF BATTERY, EXCESS SMOKE, FLASH, LOUD OR MUFFLED REPORT, MALFUNCTION, OR STOPPAGE) IMMEDIATELY INSPECT THE WEAPON. CLEAR THE WEAPON. CHECK THE BARREL FOR OBSTRUCTION. CHECK THE FEEDER, BOLT FACE, AND RECEIVER FOR DAMAGE OR UNUSUAL DEBRIS. *DO NOT* TRY TO CLEAR AN OBSTRUCTED BORE. TO GET ASSISTANCE, FOLLOW THE INSTRUCTIONS IN THE LOCAL OR UNIT SOP. CONTINUED FIRING MAY CAUSE DEATH OR INJURY.
2. *DO NOT* RELINK OR FIRE AMMUNITION THAT HAS BEEN CYCLED THROUGH THE WEAPON.

**WARNING**

1. Clear all nonessential personnel away from the gun position.
2. If, when you fire a round, you--
  - Hear a muffled sound
  - See excess smoke coming out of the chamber area
  - See excess debris, gas, or both coming from below the gun

***DO NOT*** perform immediate action.

***DO*** notify your supervisor.

- a. Keep the weapon pointed at the target.
- b. Pull the bolt to the rear to charge the weapon and have the assistant gunner catch the live round as it is ejected.
- c. If the weapon will not charge, stop immediate action and apply remedial action to clear a jammed bolt (Step 2b).
- d. Push the charging handles forward and up.
- e. Place the safety switch in the safe (S) position.
- f. Check for bore obstruction.
- (1) Make sure the safety switch is on safe (S).

**WARNING**

- 1. DO NOT let the bolt go forward--this could cause a round to fire accidentally.**
- 2. DO NOT insert your hands into the receiver with the bolt locked to the rear on sear. If you do so, you could suffer a severe injury.**
- 3. DO make sure the safe/fire switch is in the safe (S) position.**

(2) Lower the charging handles, maintain your grip, and apply back pressure to the bolt.

(3) Have the assistant gunner open the top cover and check the bolt face for a live round.

(4) If a live round, spent case, or debris is present--

(a) Have the assistant gunner remove the catch bag and be prepared to catch live any live ammunition that falls from the bottom of the weapon.

(b) Charge the bolt completely until the bolt clicks (locks) to the rear. Return the handles to the forward position, handles down.

(c) If a round is still present, have the assistant gunner clear it from the bolt face by inserting a cleaning rod through the slot in the charger handle assembly and catching the round.

(d) Have the assistant gunner place the bore obstruction device (BOD) into the chamber end of the barrel (weighted end first).

(e) Snake the BOD into the barrel.

(f) If the cable stops feeding, pull it back and push it forward again.

(g) If you cannot push the cable forward any farther, the bore is obstructed. STOP. Notify your supervisor at once

**WARNING**

**If you find that the bore of the weapon is obstructed, notify your supervisor and follow your unit SOP.**

**Never try to remove an obstructing round from the bore. Only trained and qualified personnel should do so.**

**DO NOT transport a weapon with a projectile lodged in the bore.**

(5) If you are able to insert the BOD cable through the barrel so that you see the weighted end of the cable protruding from the flash suppressor, then the barrel is clear.

(6) Move the safety switch to the fire (F) position and try to fire.

(7) If the weapon does not fire, put the safety switch on safe (S) and wait 10 seconds.

(8) Pull the bolt to the rear. Have the assistant gunner catch the live round as it ejects.

(9) Notify your supervisor.

2. Apply immediate action during combat.
  - a. Press the charger handle locks, and rotate the charger handles down.
  - b. Pull the charger handles to the rear until the bolt sears.
  - c. Push the charger handles forward and rotate them up.
  - d. Relay the gun and fire.
  - e. If the gun fails to fire, apply remedial action.

### **WARNING**

**Do not use combat misfire procedures during peacetime or training. Serious injury can result if you do not observe precautions.**

**NOTE:** Both charger handles must be forward and up for firing. If either handle is down, the gun will not fire.

3. Apply remedial action to correct malfunctions.
  - a. Correct sluggish operation of a MK 19 machine gun.
    - (1) Clean weapon and perform operator-level maintenance. Refer to task 071-030-0001, *Maintain a MK 19 Machine Gun*.
    - (2) Check recoil springs for weakness and bent guide rods.
    - (3) If you find defects that are not correctable, notify your supervisor.

### **WARNING**

**Be sure bolt is forward before removing backplate pin assembly. Otherwise, serious injury could result!**

- b. Clear a jammed bolt (weapon will not charge).

### **DANGER**

**PERFORM THESE PROCEDURES IN SEQUENCE. OTHERWISE, THE BOLT COULD SPRING FORWARD SUDDENLY AND FIRE A ROUND, CAUSING INJURY OR DEATH.**

**NOTE:** Clear all non-essential personnel away from the gun position.

- (1) Place the safety switch on the safe (S) position.
  - (2) Press the charger handle locks, and rotate the charger handles down.

(3) Pull the charger handles to the rear as far as possible. Maintain rearward pressure on them, and have the assistant gunner lift the top cover.

**DANGER**

**DO NOT ALLOW THE BOLT TO SLAM FORWARD WHILE YOU ARE OPENING THE TOP COVER.**

**IF THE BOLT WERE TO SLAM FORWARD WHILE YOU ARE OPENING THE TOP COVER, THE WEAPON COULD FIRE A LIVE ROUND, CAUSING INJURY OR DEATH.**

(4) Pull the charger handles to the rear until the bolt clicks (locks); make sure the bolt stays to the rear when you release the charger handles.

(5) Insert the cleaning rod section through the slot in the side of the receiver. Prepare to catch the ejected round.

(6) Raise the cleaning rod to force the live round down. Catch the live round as it ejects.

(7) Remove the ammunition belt from feeder.

(8) Reposition the ammunition belt in the feeder.

(9) Place the safety switch on fire (F) position.

(10) Ride the bolt forward by grasping one charging handle and depressing the trigger.

(11) Make sure the feed slide assembly is to the left.

(12) Make sure the secondary drive lever is engaged with the feed slide pin. If not, engage the forked end with the feed slide pin.

(13) Close the top cover gently.

(14) Charge the weapon and try to fire.

(15) If the bolt jams again, repeat (1) through (7). Then, place the safety switch on the safe (S) position, and notify your supervisor.

c. Apply corrective action for uncontrolled fire (runaway gun).

**WARNING**

**Never try to twist the belt with your hands. This could result in serious injury to personnel.**

(1) Keep the gun pointed on target.

(2) Lower one charging handle to make the gun stop firing.

(3) Place the safety switch on safe (S) position.

(4) Clear the weapon and report its condition to your supervisor.

## EVALUATION PREPARATION

*Setup:* Provide soldier with the equipment and personnel listed in conditions.

*Brief Soldier:* Tell the soldier to take the correct action for each situation listed in standards, one situation at the time. If it is unclear what actions the soldier is performing, have the soldier describe the action.

## EVALUATION GUIDE

Performance Measures	Results	
1. Apply immediate action when the weapon fails to fire. a. Peacetime and training. b. Combat only.	P	F
2. Apply remedial action to correct malfunction. a. Correct the sluggish operation of a MK 19 machine gun. b. Clear a jammed bolt (weapon will not charge). c. Apply corrective action for uncontrolled fire (runaway gun).	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
FM 23-27	None
TM 9-1010-230-10	

## **UNLOAD A MK 19 MACHINE GUN**

### **071-030-0006**

#### **CONDITIONS**

Given a MK 19 machine gun mounted on an M3 tripod or vehicle and loaded with linked 40-mm grenade ammunition.

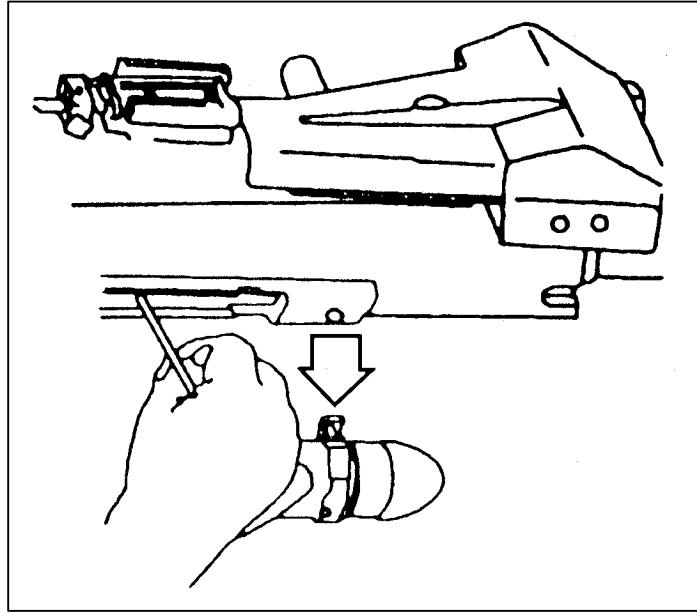
#### **STANDARDS**

Unload the MK 19 machine gun, removing ammunition and empty casings. Clear the weapon, making sure the chamber is empty and the safety switch is in the safe (S) position.

#### **TRAINING AND EVALUATION**

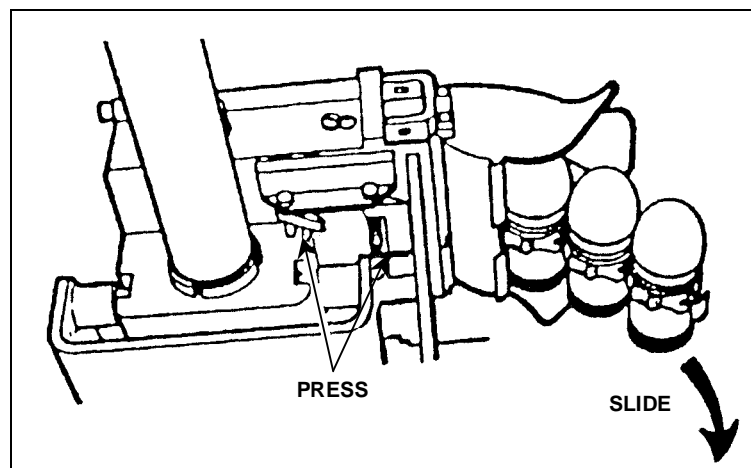
##### **Training Information Outline**

1. Place the safety switch on the safe (S) position.
2. Charge the weapon.
3. Return the charger handles to the forward position and rotate only one charger handle up.
4. Remove the live round or spent case from bolt.
  - a. Insert the tip of a cleaning rod through the right hand rail as close to the bolt face as possible ([Figure 1](#)).
  - b. Lift up on the cleaning rod to force the live round or case off the bolt face and out the bottom of the gun. Catch the live round or the spent case as it falls out.



**Figure 1. Removal of round or spent case.**

5. Remove linked rounds from the feeder.
  - a. Open the top cover. Check for rounds in the feeder. If you find any rounds in the feeder, perform the following actions (Figure 2):
    - (1) With one hand, reach beneath the feeder. Press the primary and secondary positioning pawls at the same time.
    - (2) At the same time, slide the linked rounds out of the feeder and feed throat.
  - b. Place linked rounds in the ammunition can.



**Figure 2. Removal of linked rounds from the feeder.**

6. Place the safety switch in the fire (F) position.

7. Ride the bolt forward.
  - a. Hold one charger handle to the rear.
  - b. Press the trigger to release the bolt; ride the bolt forward.
  - c. Make sure both charging handles are forward and in the up position.
8. Place the safety switch in the safe (S) position.
9. Index the feed slide assembly to the left.
10. Close and latch the top cover.

### EVALUATION PREPARATION

*Setup:* Provide the soldier with the equipment listed in the task conditions statement.

*Brief Soldier:* Tell the soldier to load the MK 19 according to the task steps.

### EVALUATION GUIDE

Performance Measures	Results	
1. Place the safety switch on safe (S) position.	P	F
2. Charge the weapon.	P	F
3. Return the charger handles to the forward position, and rotate only one charger handle up.	P	F
4. Remove the live round or spent case from bolt. <ol style="list-style-type: none"><li>a. Insert the tip of a cleaning rod through the right-hand rail as close to the bolt face as possible.</li><li>b. Raise up on the cleaning rod to force the live round or case off the bolt face and out the bottom of the gun. Catch the live round or the spent case as it falls out.</li></ol>	P	F
5. Remove any linked rounds from the feeder. <ol style="list-style-type: none"><li>a. Open the top cover. Check for rounds in the feeder. If you find rounds in the feeder, then perform the following actions:<ol style="list-style-type: none"><li>(1) With one hand, reach beneath the feeder, and press the primary and secondary positioning pawls at the same time.</li><li>(2) At the same time, slide the linked rounds out of the feeder and feed throat.</li></ol></li><li>b. Place linked rounds in the ammunition can.</li></ol>	P	F



## EVALUATION GUIDE

Performance Measures	Results	
6. Place the safety switch on fire (F) position.	P	F
7. Ride the bolt forward.	P	F
a. Hold one charger handle to the rear.		
b. Press the trigger to release the bolt, and ride the bolt forward.		
c. Make sure both charging handles are forward and in the up position.		
8. Place the safety switch on safe (S) position.	P	F
9. Index the feed slide assembly to the left.	P	F
10. Close and latch the top cover.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
FM 23-27	None
TM 9-1010-230-10	

## **DISMOUNT A MK 19 MACHINE GUN FROM AN M3 TRIPOD 071-030-0012**

### **CONDITIONS**

Given a cleared MK 19 machine gun mounted on an M3 tripod, and an assistant gunner.

### **STANDARDS**

Remove the MK 19 from the M3 tripod without damage to equipment or injury to personnel.

### **TRAINING AND EVALUATION Training Information Outline**

#### **WARNING**

- 1. A two-man lift is required for the MK 19 machine gun and each fully loaded M548 ammunition container. DO NOT try to lift either by yourself.**
- 2. Before performing any procedure, make sure the weapon is clear of all ammunition.**

1. Check to make sure the weapon is clear.
2. Squeeze the spring-loaded pins on the feed throat assembly, and remove the feed throat assembly.
3. Remove the gun mount retaining pin.
4. Lift up and pull the gun rearward until it is free of the mounting lugs. Then, with the help of the assistant gunner, lift the gun from the gun mount.
5. Remove the T&E mechanism.
6. Reach under the tripod head (right side) and lift the pintle lock. Remove the gun mount from the tripod.

#### **WARNING**

**When extending or collapsing the M3 tripod, grasp the feet on the rear legs. The sliding sleeve on the right rear leg can cause injury to personnel.**

7. Adjust the tripod legs to their shortest length. Collapse the tripod for carrying or stowing.

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide the soldier with the equipment listed in the task conditions statement.

*Brief Soldier:* Tell the soldier that he must dismount the MK 19 from the M3 tripod.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Check to make sure weapon is clear.	P	F
2. Remove feed throat assembly.	P	F
3. Remove gun from gun mount.	P	F
4. Remove T&E mechanism.	P	F
5. Remove the gun mount from the tripod.	P	F
6. Prepare the tripod for carrying or stowing.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
FM 23-27	None
TM 9-1010-230-10	

## **DISMOUNT A MK 19 MACHINE GUN FROM A VEHICLE**

### **071-030-0010**

#### **CONDITIONS**

Given an assistant gunner, a cleared MK 19 machine gun mounted on a vehicle equipped with M4 pedestal mount, M66 ring mount, or HMMWV armament carrier ring and pedestal.

#### **STANDARDS**

Remove MK 19 machine gun and components from the vehicle carrier without damage to equipment or injury to personnel.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

#### **WARNING**

**A two-man lift is required for the MK 19 machine gun and each fully loaded M548 ammunition container.**

**DO NOT try to carry either the weapon or a fully loaded ammunition container by yourself.**

1. Remove the MK 19 from a vehicle equipped with the M4 pedestal.
  - a. Remove the feed throat assembly.
  - b. Remove the rear retaining pin from the gun mount cradle.
  - c. Remove the front stow pin from the gun mount cradle.
  - d. Lift the MK 19 from the M4 pedestal.
  - e. Remove the ammunition container bracket.
  - f. Remove the support clamps from the M4 pedestal.
  - g. Remove the quick release pin from the pintle adapter.
  - h. Remove the gun mount from the M4 pedestal.
  - i. Loosen the upper locking lever on the M4 pedestal.
  - j. Lift the pintle adapter from the M4 pedestal.
  - k. Tighten the upper locking lever on the M4 pedestal.
2. Remove the MK 19 from the HMMWV armament carrier ring and pedestal.
  - a. Perform Steps 1a through 1h for the M4 pedestal.
  - b. Loosen the pedestal bolts, and remove the pintle adapter.
  - c. Tighten the pedestal bolts.

3. Remove the MK 19 from a vehicle equipped with an M66 ring mount.
  - a. Perform Steps 1a through 1h for the M4 pedestal.
  - b. Rotate the pintle lock handle to the unlocked position.
  - c. Remove the pintle adapter.

### EVALUATION PREPARATION

*Setup:* Provide the soldier with equipment and personnel listed in conditions.

*Brief Soldier:* Tell the soldier to correctly dismount the MK 19 from the vehicle without damage to equipment or injury to personnel.

### EVALUATION GUIDE

Performance Measures	Results	
1. Remove MK 19 from vehicle equipped with M4 pedestal.	P	F
2. Remove MK 19 from the HMMWV armament carrier ring and pedestal.	P	F
3. Remove MK 19 from vehicle equipped with M66 ring mount.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

Required	Related
FM 23-27	None
TM 9-1010-231-13&P	

**M203 GRENADE LAUNCHER**  
**PERFORM A FUNCTION CHECK**  
**ON AN M203 GRENADE LAUNCHER**  
**071-311-2126**

**CONDITIONS**

Given an M203 grenade launcher.

**STANDARDS**

Perform a check to determine if the M203 grenade launcher is functioning properly.

**TRAINING AND EVALUATION**  
**Training Information Outline**

<b>WARNING</b> <b>Ensure weapon is unloaded.</b>
---

1. Check to ensure weapon is clear.
2. Check operation of sear.
  - a. Cock the launcher and squeeze the trigger; the firing pin should release.
  - b. Hold the trigger to the rear and cock the launcher.
  - c. Release the trigger and then squeeze the trigger; the firing pin should release.

<b>WARNING</b> <b>The launcher could fire without squeezing the trigger if the sear does not function properly.</b>
--

3. Check safety.
  - a. Cock the launcher.
  - b. Place the safety on SAFE and pull the trigger; the firing pin should not release.
  - c. Place the safety on FIRE and pull the trigger; the firing pin should release.
4. Move the barrel forward and back and check to ensure the stop and barrel latch function correctly.
5. Turn in the weapon to the unit armorer if it does not function correctly.

## EVALUATION PREPARATION

*Setup:* Provide the equipment in the conditions statement.

*Brief Soldier:* Tell the soldier to perform a function check on the M203 grenade launcher. Inform the soldier that he must notify the evaluator if the M203 does not function correctly.

## EVALUATION GUIDE

Performance Measures		Results	
1.	Check operation of sear.	P	F
2.	Check safety.	P	F
3.	Check the barrel stop and barrel latch.	P	F
4.	Turn in malfunctioning weapon to the unit armorer.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

**Required**  
TM 9-1010-221-10

**Related**  
None

## MAINTAIN AN M203 GRENADE LAUNCHER

### 071-311-2125

#### CONDITIONS

Given an M203 grenade launcher; cleaner, lubricant, preservative (CLP); thong; bore brush; and clean rags.

#### STANDARDS

Clear the M203 grenade launcher; disassemble the M203; clean and lubricate the M203; inspect the M203 before assembly; assemble the M203; and perform a function check on the M203.

#### TRAINING AND EVALUATION

##### Training Information Outline

1. Clear the M203 grenade launcher.
2. Disassemble the M203 ([Figure 1](#)).

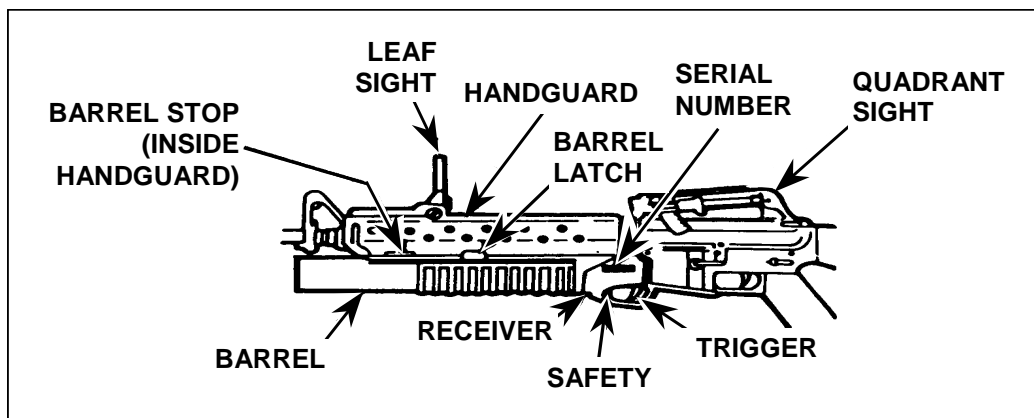


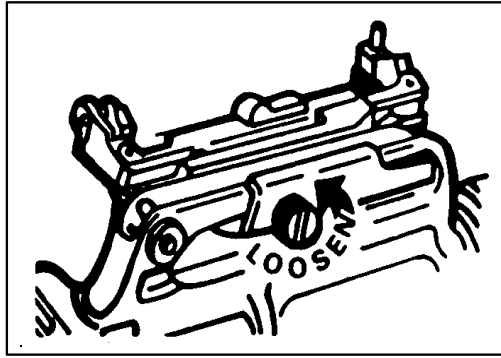
Figure 1. Components of the M203 grenade launcher.

#### WARNING

Before disassembling the weapon, clear the rifle and grenade launcher.

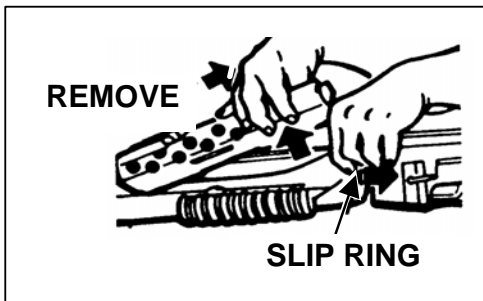
- a. Remove the quadrant sight (if used) by loosening the knurled screw on the right side ([Figure 2](#)).





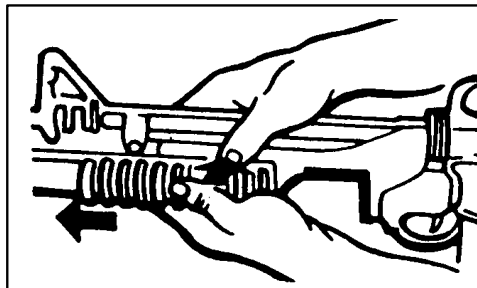
**Figure 2. Removing quadrant sight.**

- b. Pull back the slip ring. Lift up on the handguard and pull it to the rear to remove (Figure 3).



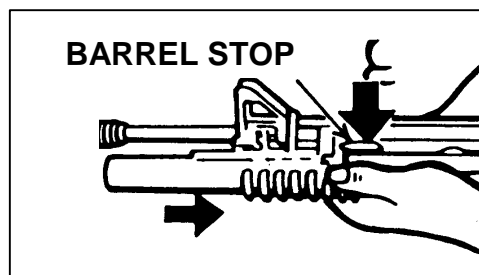
**Figure 3. Removing handguards.**

- c. Press the barrel latch and move the barrel forward to the barrel stop (Figure 4).



**Figure 4. Unlocking and opening the M203 barrel.**

- d. Press the barrel stop to release the barrel from the receiver and remove the barrel (Figure 5).

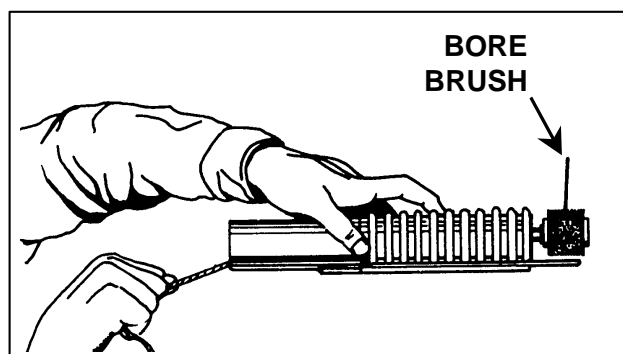


**Figure 5. Removing the M203 barrel.**

**NOTE:** Further disassembly may only be performed by the armorer.

3. Clean and lubricate the M203.

a. Bore. Attach a clean, dry rag to the thong and thoroughly moisten the rag with CLP. Pull the rag through the bore several times. Attach the bore brush to the thong, pull it through the bore several times, and follow this with more rags, moistened with CLP, if needed (Figure 6). Pull dry rags through the bore and inspect each rag as it is removed. The bore is clean when a dry rag is removed unfouled. Pull a rag lightly moistened with CLP through the bore to leave a light coat of lubricant inside the barrel.



**Figure 6. Cleaning the M203 barrel.**

b. Breech insert. Clean the face of the breech insert retainer with a patch and CLP. Remove the CLP cleaner with dry rags, then lubricate the breech with a light coat of CLP.

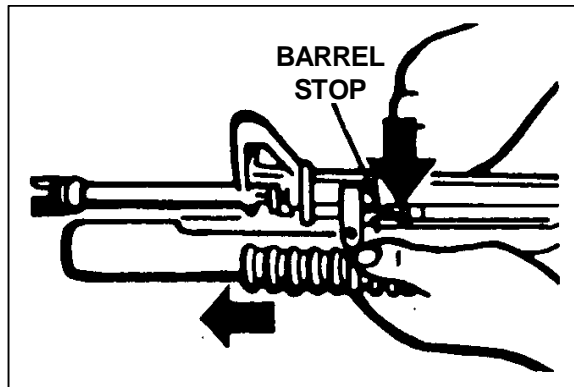
c. All other parts. Use a brush and dry rags to clean all other parts and surfaces. Apply a light coat of CLP to the exterior of the launcher after cleaning.

d. Safety mechanism. Clean the safety mechanism properly with CLP. Lubricate the safety with CLP.

**NOTE:** For cleaning the rifle portion of the launcher, refer to Task 071-311-2025, Maintain an M16A1 or M16A2 Rifle.

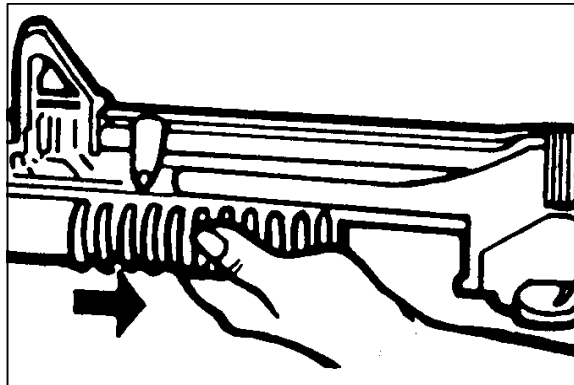
4. Inspect the M203 before assembly.

- a. Check handguard for cracks, dents, or distortion that prevent its firm attachment to the rifle.
  - b. Check leaf sight for bent or damaged parts and for rust or corrosion.
  - c. Check leaf sight for legibility of marking.
  - d. Check barrel for cracks and general condition. Inspect all parts for wear and damage.
  - e. Check for burrs, scratches, nicks, or other damage.
5. Assemble the M203.
- a. Press the barrel stop. Slide the barrel into the receiver (Figure 7).



**Figure 7. Installing the M203 barrel.**

- b. Move the barrel rearward to close (Figure 8).



**Figure 8. Locking the M203 barrel.**

- c. Install the handguard and secure with the slip ring (Figure 9).

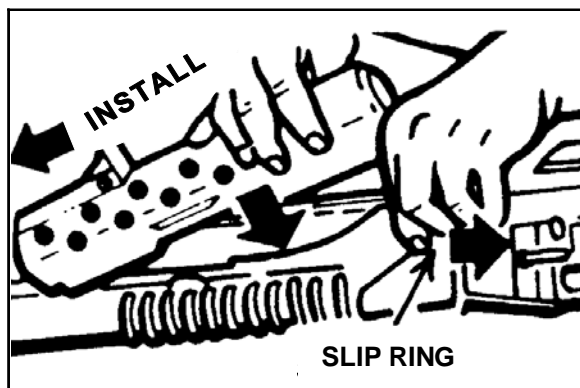


Figure 9. Installing the handguards.

- d. Install the quadrant sight (Figure 10).

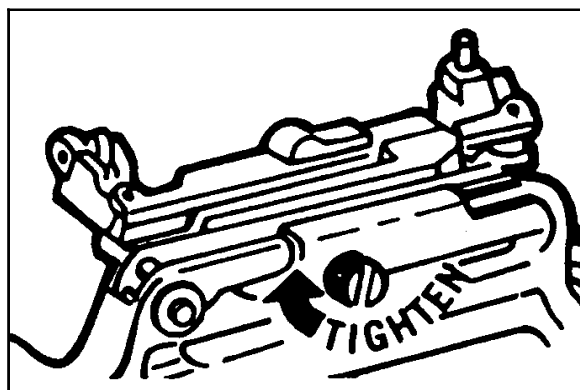


Figure 10. Installing the quadrant sight.

6. Perform a function check on the M203.
- Check the proper operation of the sears. Cock the launcher and pull the trigger. The firing pin should release. Hold the trigger to the rear and the cock launcher. Release the trigger, then pull. The firing pin should release.

**WARNING**

**The launcher could fire without pulling the trigger if the sears do not function properly.**

- Check the safety in both SAFE and FIRE positions with trigger. Launcher must be cocked before safety can be placed in SAFE position.
- Check the leaf sight windage adjustment screw for proper operation. Do not move the elevation adjustment screw if the weapon has been zeroed.
- Move barrel forward and back to be sure the stop and barrel latch function.

## EVALUATION PREPARATION

*Setup:* At the test site, provide all materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier that he will perform unit maintenance on the M203 grenade launcher.

## EVALUATION GUIDE

Performance Measures	Results	
1. Clear the M203 grenade launcher.	P	F
2. Disassemble the M203.	P	F
a. Remove the quadrant sight.		
b. Pull back the slip ring.		
c. Move the barrel forward to the barrel stop.		
d. Remove the barrel.		
3. Clean and lubricate the M203.	P	F
a. Clean the bore.		
b. Clean the breech insert.		
c. Clean all other parts.		
d. Clean the safety mechanism.		
4. Inspect the M203 before assembly.	P	F
a. Check the handguards.		
b. Check the leaf sight.		
c. Check the barrel.		
d. Check for burrs, scratches, and other damages.		
5. Assemble the M203.	P	F
a. Slide the barrel into the receiver.		
b. Close the barrel.		
c. Install the handguard.		
d. Install the quadrant sight.		
6. Perform a function check on the M203.	P	F
a. Check operation of the sears.		
b. Check safety in both the SAFE and the FIRE positions.		
c. Check the leaf sight windage adjustment screws for proper operation.		
d. Check the barrel latch and the stop function.		

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

#### **Required**

None FM 23-31  
TM 9-1010-221-10

#### **Related**

## **CONSTRUCT FIELD-EXPEDIENT FIRING AIDS FOR AN M203 GRENADE LAUNCHER 071-032-0006**

### **CONDITIONS**

As a member of a rifle squad in a defensive position during daylight, given an M203 grenade launcher, M203 ammunition, sticks or rocks, boards or logs available in the area, instructions on the individual's preplanned sectors of fire for use during limited visibility, and left and right limits.

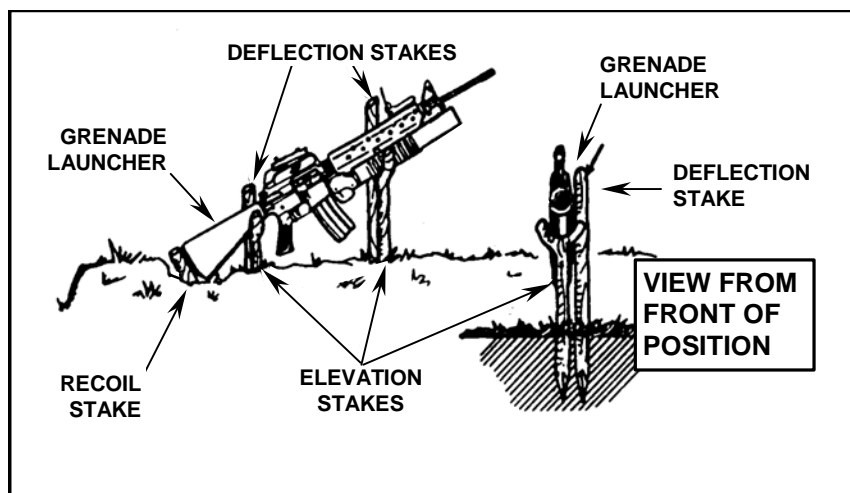
### **STANDARDS**

Construct and place out aiming and firing stakes for use during limited visibility. Ensure the stakes mark targets in the sector of fire (to include likely avenues of enemy approach and enemy assault positions) and that they also mark dead spaces.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Within the sector of fire, locate possible targets, dead space, likely avenues of enemy approach, and likely enemy assault positions.
2. Estimate the range to the located targets by one of the following methods:
  - a. Pacing. (See Task 071-329-1006, Navigate from one Point on the Ground to Another Point While Dismounted, STP 21-24-SMCT).
  - b. Map Distance. (See Task 071-329-1008, Measure Distance on a Map, STP 21-1-SMCT).
  - c. Naked Eye. (See Task 071-326-0512, Estimate Range, STP 21-1-SMCT).
3. Place the estimated range to target on the quadrant sight.
4. Place the launcher on the ground with the muzzle pointing at the target and the butt plate at the fighting position.
5. Scoop out a small amount of earth, creating a small hole where the butt plate touches the ground.
6. Place the toe of the butt plate into the hole.
7. Get into the fighting position, raise the muzzle of the launcher, look through the quadrant sight, and adjust the elevation of the muzzle until the correct sight picture is observed.

8. Drive a stake into the hole behind the butt plate. This stake acts as the recoil stake.
  9. Drive two stakes into the ground to hold the launcher at the correct elevation angle—one stake under the barrel assembly and the other under the small of the stock.
  10. Drive two longer stakes into the ground to hold the launcher at the correct deflection angle—one stake alongside the elevation stake near the barrel assembly, and the other alongside the elevation stake at the small of the stock.
- NOTE:** Make sure the deflection stakes extend no more than 1 or 2 inches above the barrel assembly and small of the stock.
11. Look through the quadrant sights on the launcher and, if necessary, move the stakes to obtain the correct sight picture ([Figure 1](#)).



**Figure 1. Deflection stakes.**

12. If the situation permits, fire a grenade to test the positioning of the weapon. If necessary, change the positioning of the weapon.
13. Repeat steps 1 through 12 for each target to be laid.

**NOTE:** A forked stick can serve as both an elevation stake and a deflection stake.

### EVALUATION PREPARATION

*Setup:* At the test site, provide a fighting position, five M203 practice rounds, seven stakes, a preplanned sector of fire with left and right limits, and the range to a target. Have the soldier use his M203 grenade launcher.



*Brief Soldier:* Tell the soldier to emplace firing stakes with the correct elevation and deflection to cause rounds to impact on a target when he fires the M203.

### EVALUATION GUIDE

Performance Measures	Results	
1. Place the correct range on the quadrant sight.	P	F
2. Place the stakes in the correct position.	P	F
a. Recoil stake.		
b. Elevation stake.		
c. Deflection stake.		
3. Place the quadrant sight on the target.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

Required	Related
None	FM 7-7
	FM 7-8
	FM 7-7J

## **ZERO AN M203 GRENADE LAUNCHER**

### **071-311-2103**

#### **CONDITIONS**

Given an unzeroed M203 grenade launcher and five rounds of HE or TP ammunition (for each type of sight).

#### **STANDARDS**

Obtain an elevation and windage sight setting (on both leaf and quadrant sights) that will allow two consecutive rounds to hit within 5 meters of the point of aim at a distance of 200 meters.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

#### **WARNING**

- 1. Do not fire this launcher until you have read this task.**
- 2. Only use ammunition manufactured IAW United States specifications.**
- 3. Keep the safety on until ready to fire the weapon.**
- 4. Always keep the weapon pointed downrange.**
- 5. Do not use a range of less than 100 meters to zero.**

1. Select a target at 200 meters and fire a round. If the round does not fall within 5 meters of the target, zeroing procedures are called for. Make sight adjustments for more or less elevation. Make windage adjustments for each firing. After each round is fired, make the necessary adjustments until two consecutive rounds land within 5 meters of the aiming point ([Figure 1](#)).

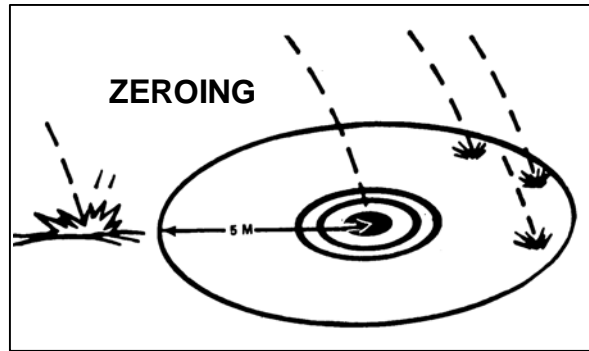


Figure 1. Zeroing procedure.

2. Zero the leaf sight:
  - a. Select a target at 200 meters.
  - b. Place the leaf sight in the upright position.
  - c. Use the leaf sight with the front sight post of the M16A1 or M16A2 rifle. The leaf sight provides range selection from 50 to 250 meters in 50-meter increments ([Figure 2](#)).

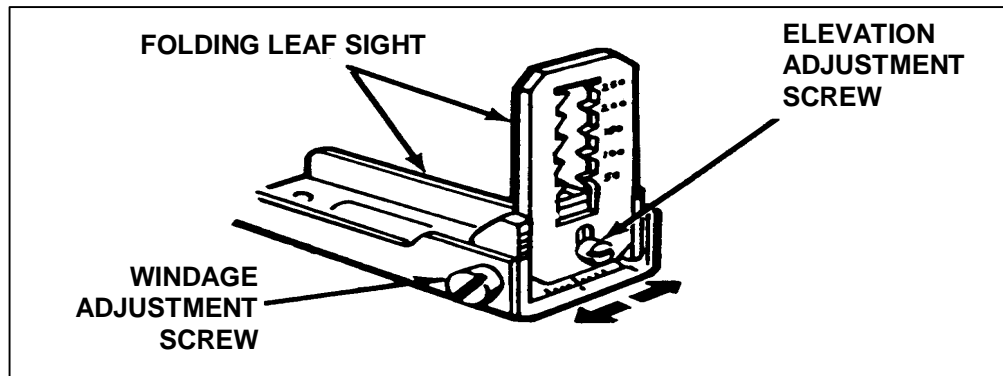


Figure 2. Leaf sight.

### WARNING

**The 50-meter mark on the leaf sight blade is red to emphasize that this range is not to be used in zeroing.**

- d. Place the center mark of the windage scale on the index line at the rear of the sight base.
- e. Loosen the elevation adjustment screw on the leaf sight, and place the index line of the leaf sight on the center elevation mark on the sight mount.
- f. Tighten the elevation adjustment screw on the leaf sight.
- g. Assume a supported prone position.
- h. Align the target with the 200-meter increment of the leaf sight and the front sight post of the rifle.
- i. Fire a round and observe the impact. Make the necessary sight adjustment.

(1) Turn the sight windage screw clockwise to move the strike of the round to the left. Turn the windage screw counterclockwise to move the strike to the right. One increment either way equals 1 1/2 meters at a range of 200 meters.

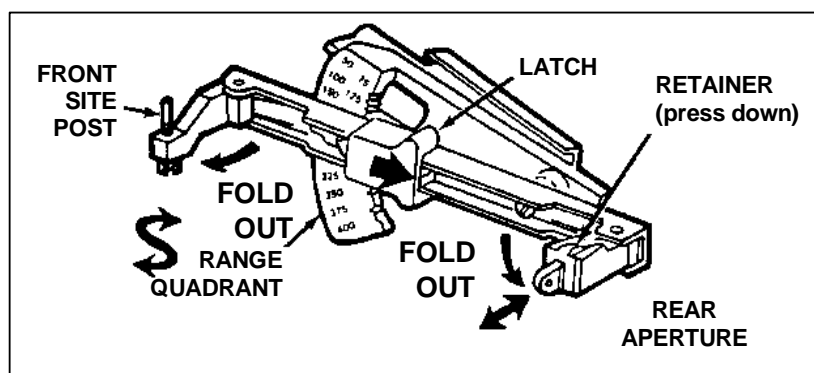
(2) Raise the leaf sight to increase range; lower it to decrease range. One increment equals 10 meters at a range of 200 meters.

j. Fire one or more rounds. Make necessary adjustments after each round until a round has landed within 5 meters of the target.

k. Fire a confirming round.

3. Zero the quadrant sight (Figure 3):

- a. Select a target at 200 meters.
- b. Ensure that the sight is correctly mounted on the carrying handle of the rifle.



**Figure 3. Quadrant sight.**

**NOTE:** The quadrant sight attaches to the rifle handle and provides range selection from 50 to 400 meters in 25-meter increments. Elevation adjustment: one notch equals 5 meters at 200 meters. The rear aperture slides in or out for windage correction when the retainer is depressed. A vertical line denotes the center. One notch equals 1 1/2 meters at a 200-meter range. Turn the front sight post right for less elevation and left for more elevation. Slide the rear aperture in to move the strike of the projectile to the right; slide it out to move the strike to the left.

- c. Move the front sight post and the rear sight aperture from closed to open.
  - (1) Depress the rear sight retainer. Slide the rear sight aperture left or right to align the wide index line of the rear sight aperture with the edge of the sight aperture arm.
  - (2) Move the front sight post to its highest position and then back 2 1/2 turns.
- d. Move the sight latch rearward. Reposition the quadrant sight arm to zeroing range (200 meters).
- e. Take a supported prone position.
- f. Align the target with the front and rear sights, using the correct sighting and aiming procedures.
- g. Fire a round, observe the impact, and make the necessary sight adjustment.

(1) For range adjustment, turn the front sight post clockwise to decrease the range and counterclockwise to increase the range. One full turn equals 5 meters at a range of 200 meters.

(2) For windage adjustment, press the sight aperture retainer and move the rear sight aperture away from the barrel to move the trajectory of the projectile to the left. Move the rear sight aperture toward the barrel to move the trajectory to the right. One notch on the rear sight aperture equals 1 1/2 meters at a range of 200 meters.

h. Fire one or more rounds. Make necessary adjustments after each round. When a round has landed within 5 meters of the target, the weapon is zeroed.

## EVALUATION PREPARATION

*Setup:* At a live-fire range, provide equipment and ammunition given in the conditions plus a zero target at 200 meters. Ensure the weapon is equipped with both the leaf sight and the quadrant sight.

*Brief Soldier:* Tell the soldier which target he is to use during zeroing. Tell him that he will have five rounds to zero the leaf sight and five rounds to zero the quadrant sight.

## EVALUATION GUIDE

Performance Measures	Results	
1. Zero the M203 leaf sight using five rounds or less (two rounds must impact within 5 meters of target).	P	F
2. Zero the M203 quadrant sight using five rounds or less (two rounds must impact within 5 meters of target).	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
None	FM 23-31 TM 9-1010-221-10

## **ZERO A NIGHT VISION SIGHT AN/PVS-4 TO AN M203 GRENADE LAUNCHER 071-315-2351**

### **CONDITIONS**

Given a magazine with 18 rounds of 5.56-mm ammunition, a silhouette target with a 25-meter zero target, sandbags, and a device to measure 9.8 centimeters or 3 7/8 inches.

### **STANDARDS**

Zero the AN/PVS-4 to the M203 so that the AN/PVS-4 reticle is aligned on the target aiming point and so that the center of the shot group is 9.8 centimeters (3 7/8 inches) below and 4.2 centimeters (1 5/8 inches) to the right of the target aiming point.

### **TRAINING AND EVALUATION** **Training Information Outline**

#### **CAUTION**

Prolonged use of the sight under high light conditions without a daylight cover will damage the image-intensifier assembly.

1. Prepare the sight.

**NOTE:** The sight may be zeroed during daylight or darkness. If zeroed during daylight, use the daylight sight cover. When zeroing or firing at night, remove the daylight cover.

- a. Support the weapon in a stable firing position.
- b. Turn the ON-OFF reticle brightness control clockwise to adjust the light intensity so that the reticle is just visible.
- c. Turn the diopter focus ring until there is a clear image of the reticle pattern.
- d. Turn the objective focus ring until the target in the field of view is sharply defined.
- e. Adjust the azimuth and elevation control until the sight reticle aiming point is about center of the field of view.

2. Zero the sight.

- a. Before trying to zero, fire three M16 rounds to settle the sight on the weapon. Retighten the mounting wing nuts.
- b. Place the zeroing range aiming point (Figure 1) of the sight reticle on the target aiming point and fire; obtain a good three-round shot group. Locate the center of the shot group.

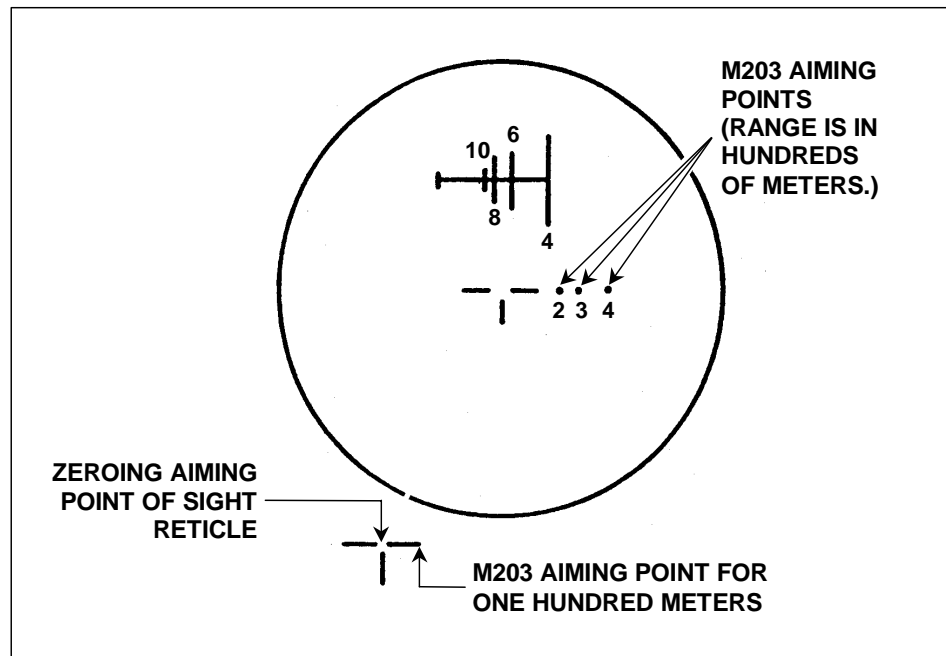
c. Adjust the sight reticle using the azimuth and elevation control knobs to move the center of the shot group to a point 9.8 centimeters or 3 7/8 inches below and 4.2 cm or 1 5/8 inches to the right of the target aiming point (Figure 2 and Figure 3).

**EXAMPLE:** If the shot group is high and to the left of the desired impact point, move the elevation adjustment in the DN (down) direction and the azimuth adjustment in the RT (right) direction.

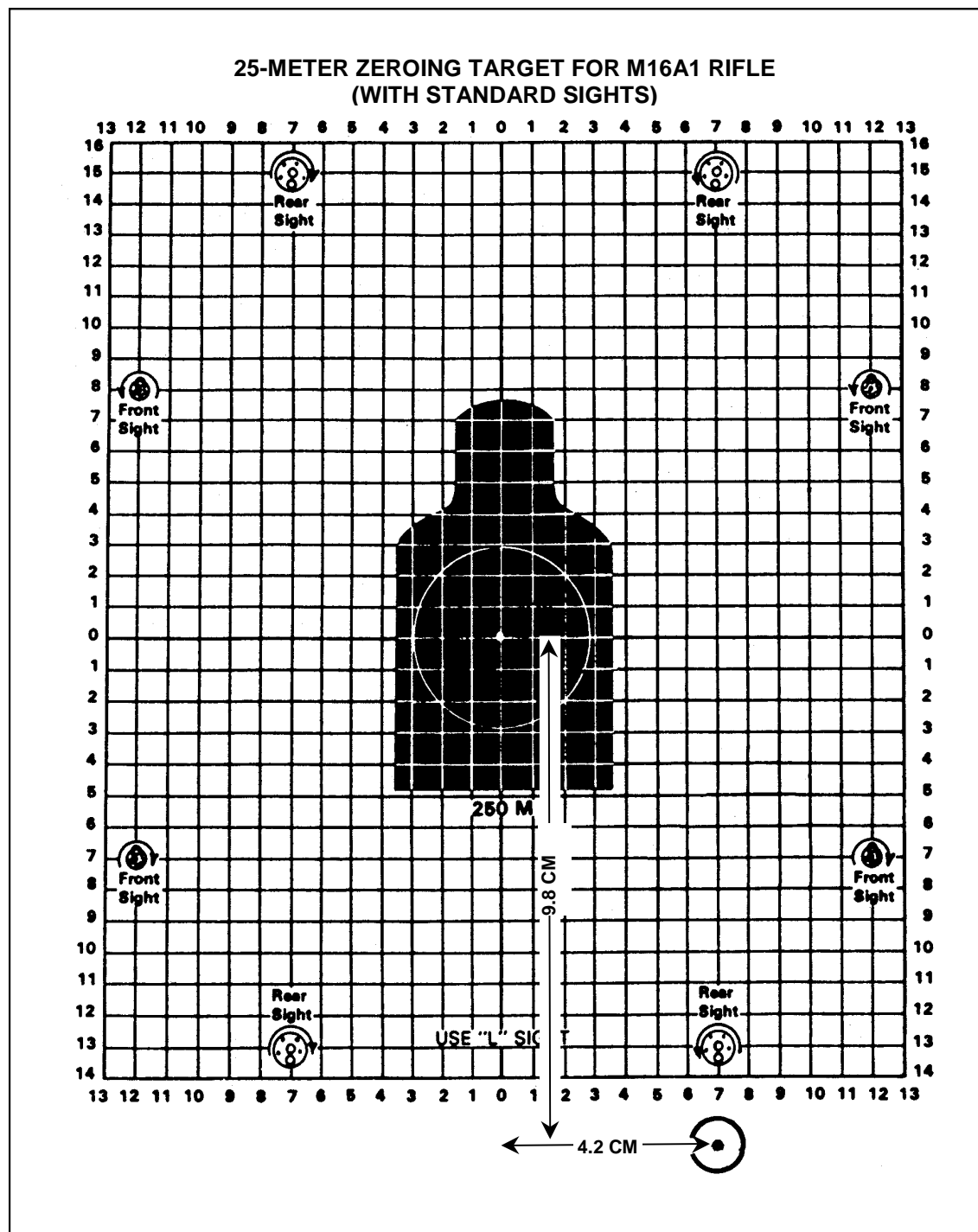
**NOTE:** Each click of the azimuth or elevation adjustment moves the strike of the round .63 centimeter or 1/4 inch at a range of 25 meters. Two clicks of adjustment move the reticle about one square on the target shown.

d. Upon completion of the rifle-zeroing portion of the M203, zero the grenade launcher for use of the M203 aiming points of the sight reticle in conjunction with the range settings on the mounting bracket (Figure 4).

**EXAMPLE:** When firing at a range of 300 meters, set the range scale of the mounting bracket to a range of 300. Then use the middle dot of the sight reticle (3) as the aiming point to place on the target.

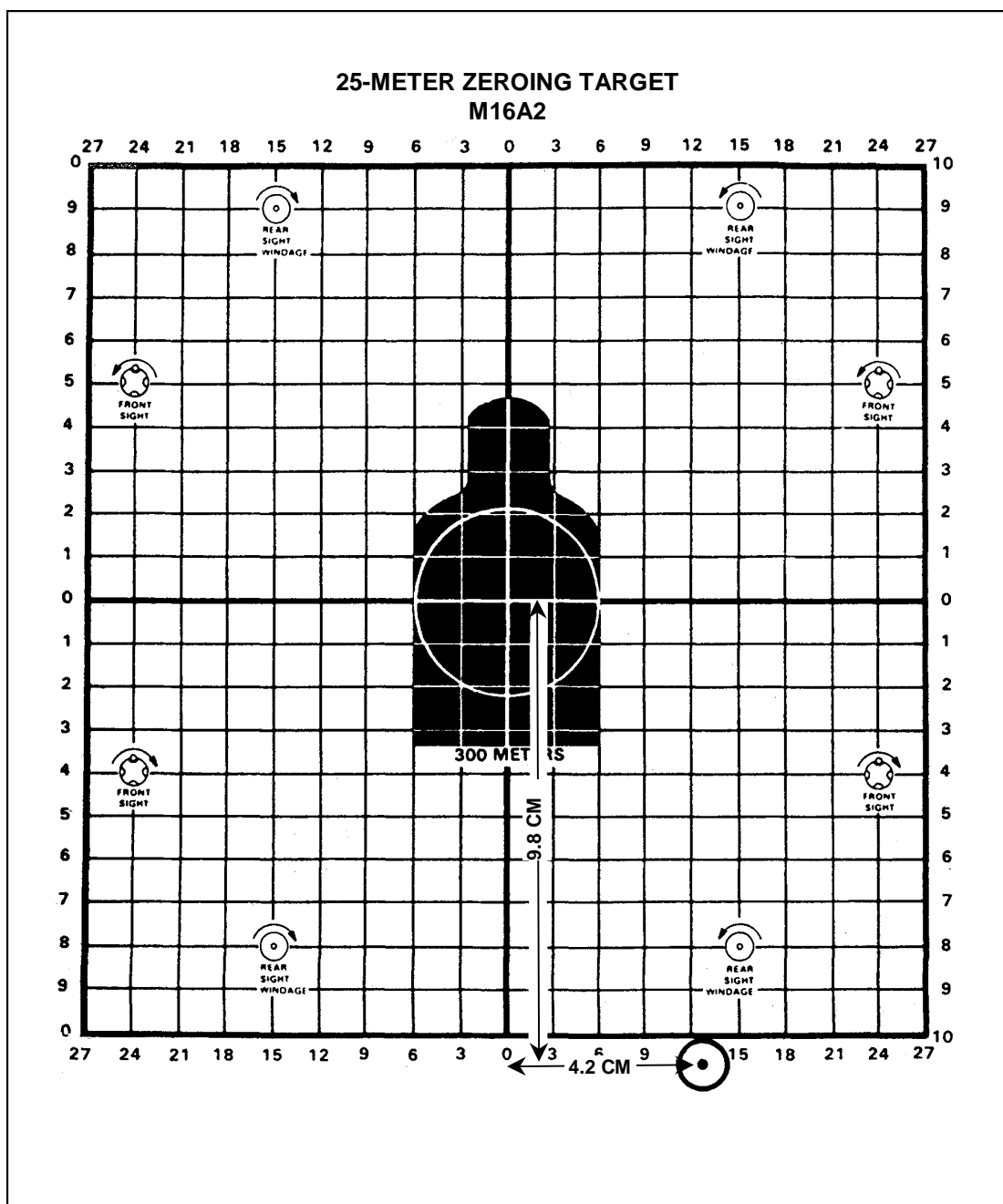


**Figure 1.**  
**Aiming points.**

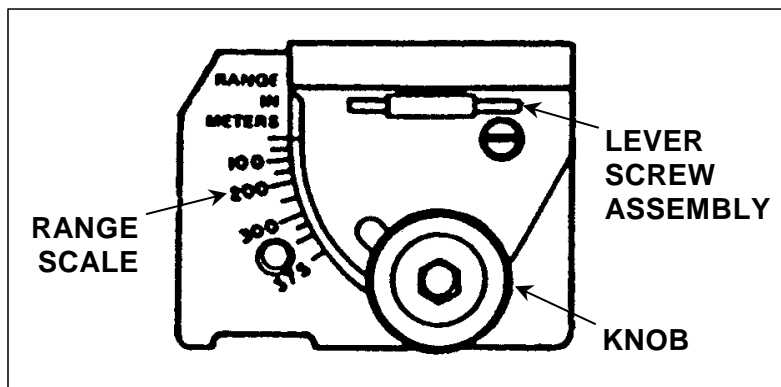


**Figure 2.**  
**Adjustment of rounds, M16A1.**





**Figure 3.**  
**Adjustment of rounds, M16A2.**



**Figure 4.**  
**Range setting on mounting bracket.**

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide all the materials given in the task conditions statement and an M203 with an AN/PVS-4 attached.

*Brief Soldier:* Tell the soldier that he is to zero the AN/PVS-4 sight in 18 rounds or less.

### **EVALUATION GUIDE**

#### **Performance Measures**

1. Place the AN/PVS-4 into operation.
2. Fire three rounds to settle the sight.
3. Zero the AN/PVS-4 in 18 rounds or less.
4. Place the AN/PVS-4 out of operation.

#### **Results**

P	F
P	F
P	F
P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

**Required**  
None

**Related**  
TM 11-5855-213-10

## ENGAGE TARGETS WITH AN M203 GRENADE LAUNCHER USING A NIGHT VISION SIGHT AN/PVS-4 071-315-2352

### CONDITIONS

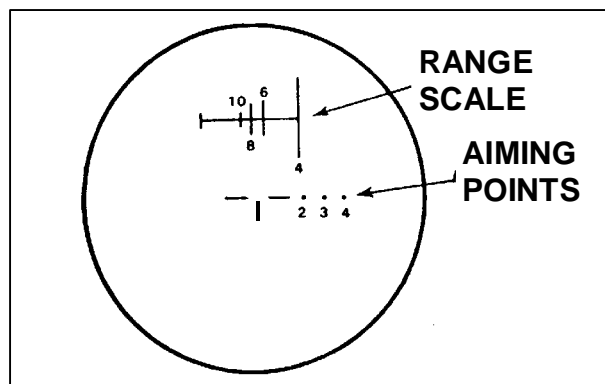
During limited visibility conditions, given an M203 grenade launcher with a mounted, zeroed, and operational AN/PVS-4 night vision sight, engageable threat target(s), three rounds of 40-mm ammunition.

### STANDARDS

Engage threat target(s) at 200 meters. Place 2 of 3 rounds within 5 meters of each other and disperse or destroy targets.

### TRAINING AND EVALUATION Training Information Outline

1. Place sight into operation (see Task 071-315-0003, Operate a Night Vision Sight AN/PVS-4).
2. Use the sight reticle. The AN/PVS-4 sight reticle consists of two parts when used with the M203 ([Figure 1](#)).
  - a. Use the upper part to determine range.
  - b. Use the lower part to aim the weapon.



**Figure 1. Sight reticle.**

3. Determine range. The vertical lines on the range scale show how far away a 6-foot-tall man is.
  - a. Place the figure on the horizontal line and match it with the vertical line ([A, Figure 2](#)).

b. Read the number at the bottom of the vertical line. That is the distance in hundreds of meters.

c. If the figure is the same height as the vertical line above and below the horizontal line, divide the distance in half. In A, Figure 2, the man above the horizontal line is 400 meters away. In B, Figure 2, the man above and below the line is 200 meters away.

4. Set the range as determined on the range indicator of the mounting bracket (Figure 3).

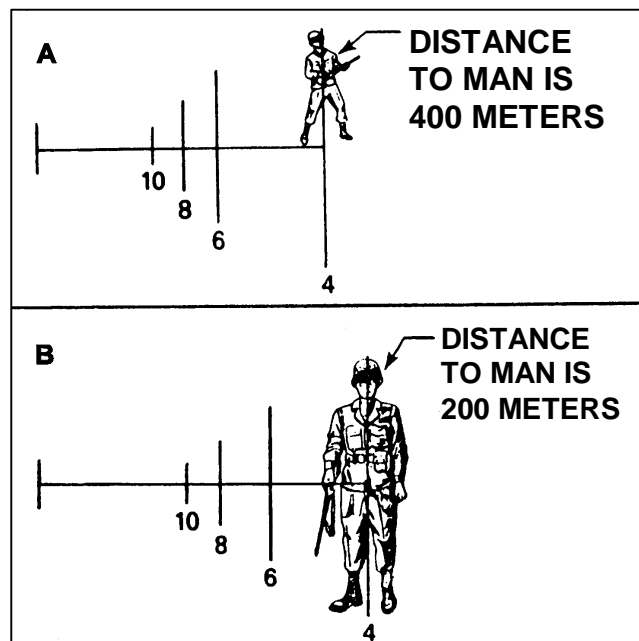


Figure 2. Determination of range.

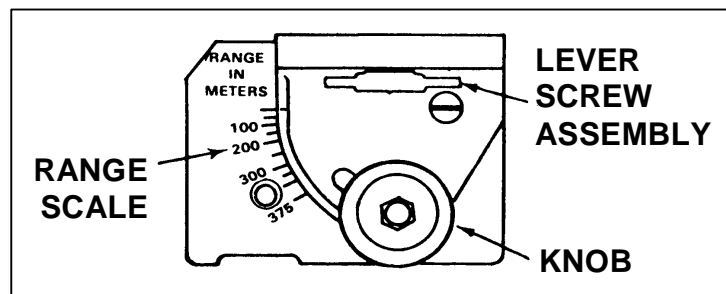


Figure 3. Range settings on mounting bracket.

5. Engage the target.

a. Place the aiming point of the sight reticle with the number corresponding to the range at the target's center of mass (Figure 4).

b. Fire the weapon using all marksmanship skills.

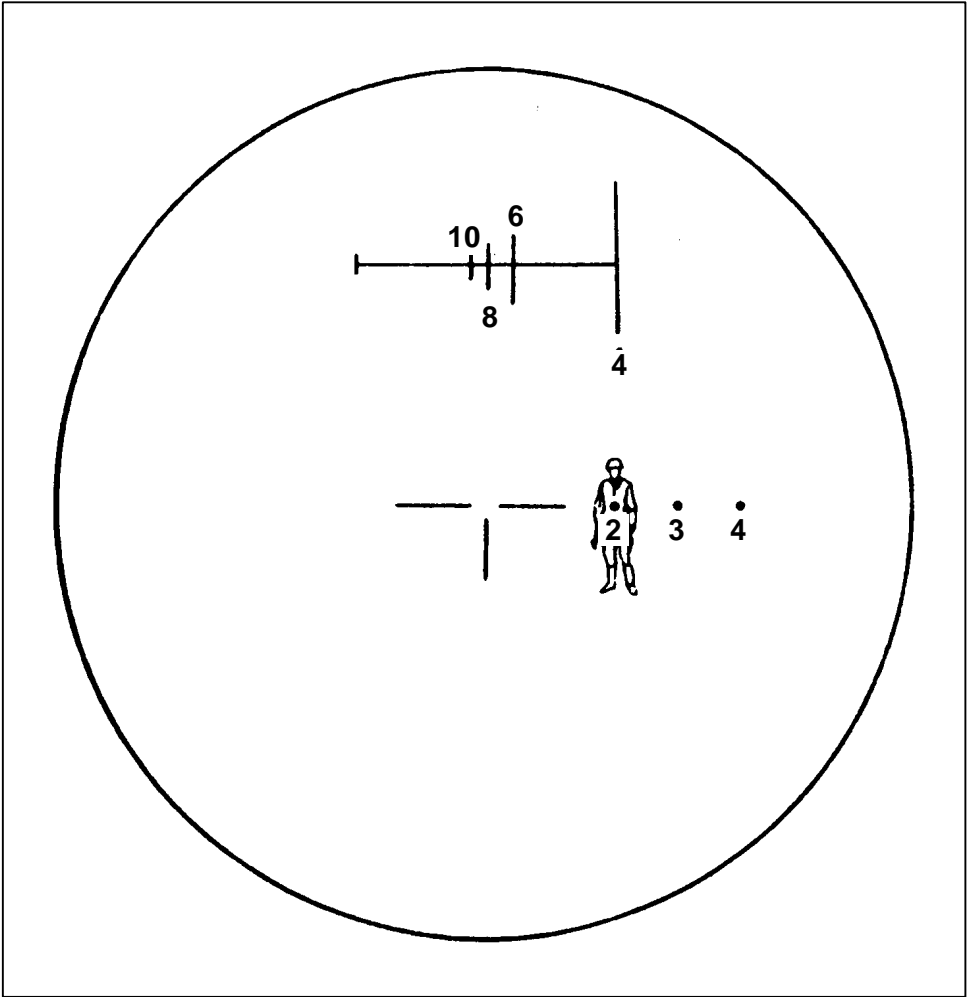


Figure 4. Engagement of target at 200 meters.

EVALUATION PREPARATION

*Setup:* At a live-fire M203 range, provide all the materials indicated in the task conditions statement. Turn off the sight after the evaluation.

*Brief Soldier:* Tell the soldier that he is to engage a target at 200 meters with the M203 using an AN/PVS-4.

EVALUATION GUIDE

Performance Measures	Results	
1. Place the AN/PVS-4 into operation.	P	F

## **EVALUATION GUIDE**

### **Performance Measures**

### **Results**

- |   |   |   |
|---|---|---|
| 2. Use the sight reticle to determine range.  | P | F |
| 3. Set the range on the mounting bracket.   | P | F |
| 4. Engage the target and place two of the three rounds within 5 meters of the target. | P | F |

## **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## **REFERENCES**

### **Required**

None

### **Related**

TM 11-5855-213-10

## **M47 MEDIUM ANTITANK WEAPON**

### **CONSTRUCT A FIGHTING POSITION FOR AN M47 MEDIUM ANTITANK WEAPON 071-052-0003**

#### **CONDITIONS**

Given an M47 medium antitank weapon (Dragon), a sector of fire, a location for the fighting position, an entrenching tool, overhead cover material, and a requirement to construct the position.

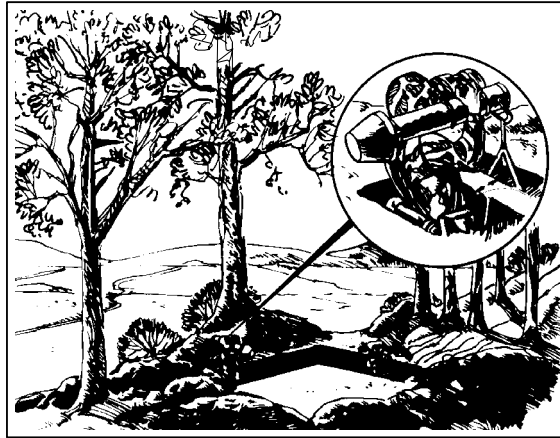
#### **STANDARDS**

Construct a fighting position that provides coverage of the assigned sectors of fire; enough room to accommodate firing and preparation of another Dragon round; cover and protection from small-arms fire by means of natural or man-made parapets; and concealment that prevents easy detection by a soldier using binoculars 1,000 meters to the front of the position.

#### **TRAINING AND EVALUATION** **Training Information Outline**

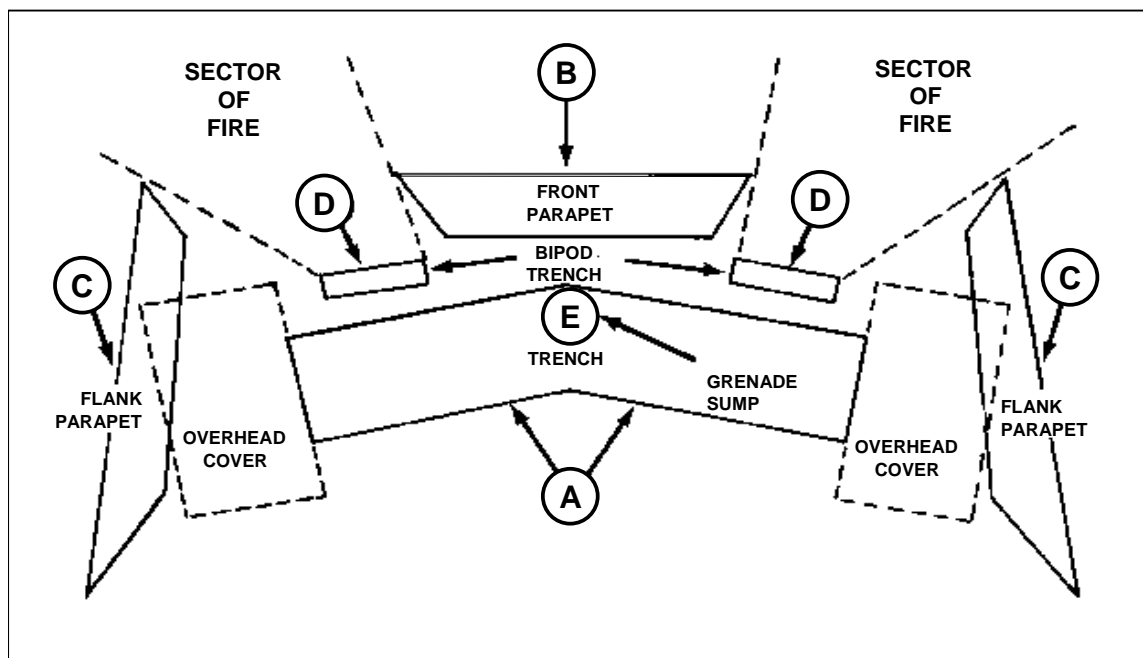
**TRAINING NOTE:** Like any other weapon organic to the platoon, the Dragon can be employed from either hasty or improved positions. A fighting position is a firing position sited and oriented to cover a sector of fire and constructed to accommodate the weapons system and its firer.

1. Prepare a position. After receiving a sector of fire and firing location from your squad leader, prepare and position the weapon to cover the sector. See [Figure 1](#) for an example of a Dragon fighting position. Clear fields of fire as necessary. Camouflage the position using available materials. Improve the position as time permits. Remember—
  - a. The muzzle end of the Dragon must extend 6 inches beyond the front of the trench.
  - b. The rear of the Dragon must extend over the rear of the trench.



**Figure 1. Example of a Dragon firing position.**

2. Construct a position. Make the position three M16s long and in an inverted “V” shape, waist-deep, and waist-wide plus about 6 inches (A, Figure 2).
  - a. Make the front parapet (B, Figure 2) one M16 long and wide, and two helmets high. Make the flank parapets (C, Figure 2) one M16 wide, two helmets high, and long enough to give good flank protection.



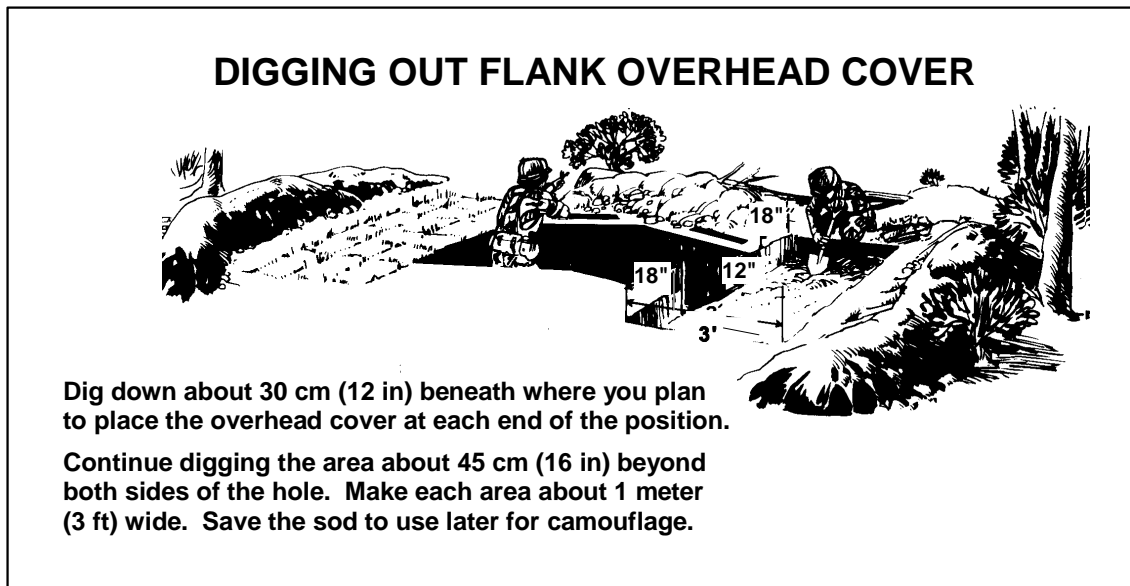
**Figure 2. Fighting position layout.**



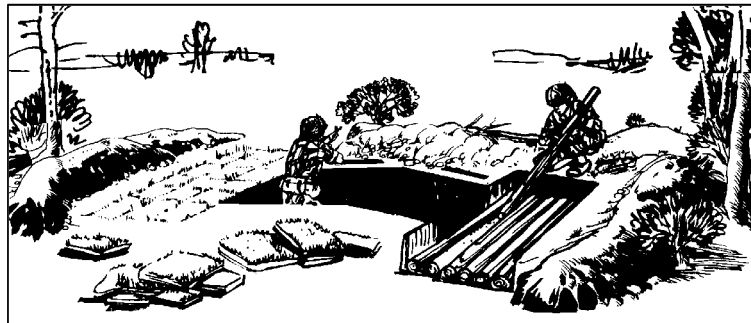
- b. Dig the bipod trench for each sector of fire (D, Figure 2) 4 to 6 inches forward of the main trench. The bipod trench should be two helmets long, one helmet wide, and 6 inches deep.
- c. Slope the grenade sump (E, Figure 2) forward at a 45-degree angle. Make it as deep and long as one entrenching tool and as wide as one entrenching tool blade. Slope the floor of the main trench gently from each end to the center and from rear to front.
- d. Construct the overhead cover at each end of the trench as follows:

**NOTE:** The overhead cover at each end should be large enough to provide protection for one man and extra rounds.

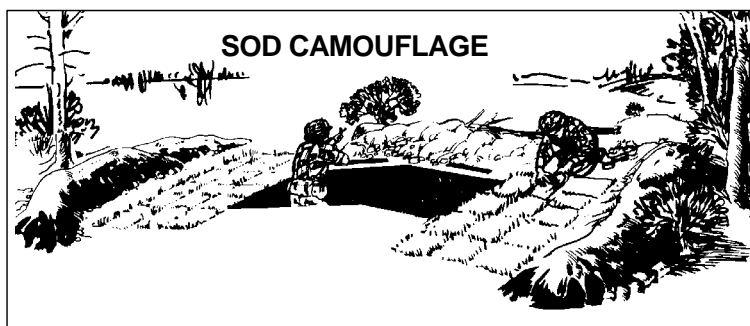
- (1) Mark the position of the overhead cover, making a rectangle one M16 wide by two M16s long at each end of the trench.
- (2) Dig out the soil within the marked area (save any sod) to about 12 inches. The area dug must extend at least 18 inches beyond each side of the trench (Figure 3).
- (3) Place 4- to 6-inch-thick logs or other supporting material into each hole (Figure 4).
- (4) Fill the remainder of the hole with dirt until it is about ground level. Use sod to cover the dirt (Figure 5).
- (5) Enter the trench and dig a cave-like hole under the logs or supporting material (Figure 6). When constructed, the flank parapets will partly hide the overhead cover (Figure 2).



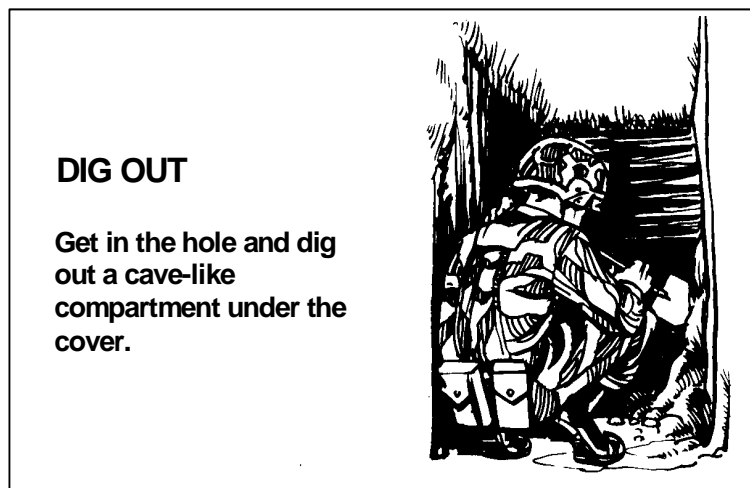
**Figure 3. Flank overhead cover layout.**



**Figure 4. Overhead cover support.**



**Figure 5. Overhead cover camouflage.**



**Figure 6. Dugout under overhead cover.**

3. Cover assigned sectors of fire. At times, the Dragon may be fired in only one direction. Construct the position with cover and concealment from all other directions. The position should have cover to the front, and targets should be engaged from the flank ([Figure 7](#)).



Figure 7. Front cover, flank engagement.

### EVALUATION PREPARATION

*Setup:* At the test site, provide all materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier that he will construct a fighting position for a Dragon. Assign the weapon location and sector of fire.

### EVALUATION GUIDE

Performance Measures	Results	
1. Prepare a position and place the weapon to cover the sector. <ul style="list-style-type: none"><li>a. The muzzle extends 6 inches beyond the trench front.</li><li>b. The rear of the weapon extends over the rear of the trench.</li></ul>	P	F
2. Construct a position. <ul style="list-style-type: none"><li>a. Prepare a position three M16s long, inverted “V” shape, waist-deep, and waist-wide plus 6 inches.</li><li>b. Construct the front parapet one M16 long, one M16 wide, and two helmets high.</li><li>c. Dig the bipod trench. The back of the bipod trench is 4 to 6 inches forward of the main trench. The bipod trench is two helmets long, one helmet wide, and 6 inches deep.</li><li>d. Prepare the grenade sump.</li><li>e. Construct the overhead cover.</li></ul>	P	F

## EVALUATION GUIDE

### Performance Measures

### Results

**NOTE:** The cover at each end should be large enough to protect one man and the weapon's extra rounds.

- (1) Mark a rectangle one M16 wide by two M16s long.
- (2) Dig out rectangle.
- (3) Place supporting material into hole.
- (4) Fill hole.
- (5) Dig under supporting material.

3. Ensure position covers assigned sectors of fire.

P F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**NOTE:** During training, comply with unit SOP, local regulations, or both concerning the cutting of live vegetation, digging holes, and preventing erosion.

## REFERENCES

### Required

None

### Related

FM 7-8

## **PREPARE AN M47 MEDIUM ANTITANK WEAPON FOR FIRING 071-317-3302**

### **CONDITIONS**

In the field, given a Dragon round and a day or night tracker in the carrying configuration.

**NOTE:** For training, an inert round of ammunition will be used.

### **STANDARDS**

Extend the bipod, mate the tracker to the round without damaging the equipment, and adjust the bipod to obtain a level sight picture.

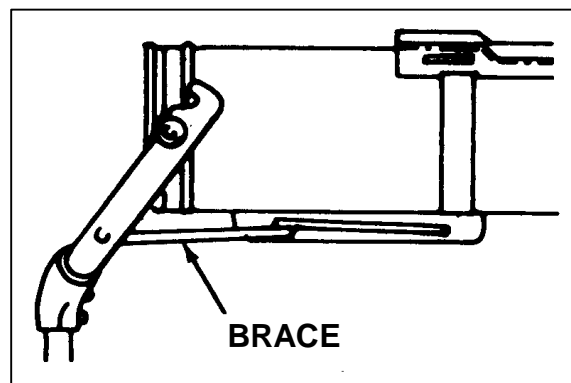
### **TRAINING AND EVALUATION** **Training Information Outline**

**NOTE:** For illustration purposes, the sitting position will be used.

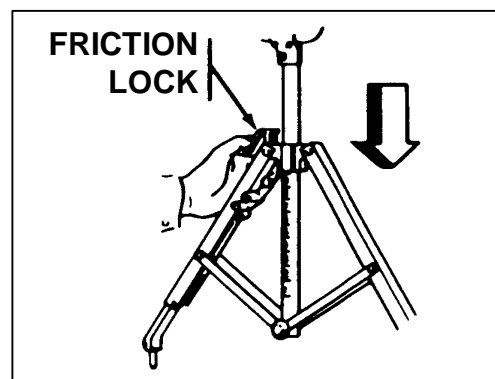
1. To prepare the round—
  - a. Place the round under the arm.
  - b. Unsnap the bipod retainer strap.
  - c. Push the bipod down and forward to release and eject the forward shock absorber (Figure 1).
  - d. Ensure that the forward bipod brace is engaged in the LOCK position (Figure 2).
  - e. Unlock the bipod friction lock and extend the bipod legs until the scale indicator reads 4 or 5, then relock the bipod friction lock (Figure 3).
  - f. Lower the round until the rear shock absorber rests on the ground. *Do not drop the round.*



**Figure 1. Prepare the round.**



**Figure 2. Lock the bipod.**



**Figure 3. Extend the bipod.**

2. To mate the tracker to the round (day or night tracker)—

**NOTE:** This example uses the day tracker for illustration purposes.

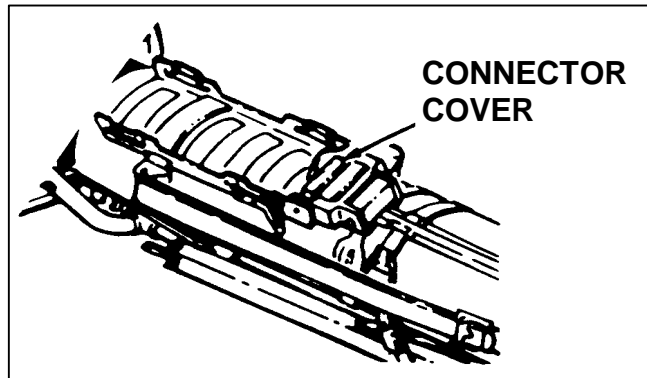
- a. Remove the connector cover from the round (Figure 4).
- b. Remove the tracker from the carrying bag (Figure 5).

**WARNING**

Do not try to lift the tracker using the shock absorbers as handles.

**CAUTION**

Touching the lens can damage it.

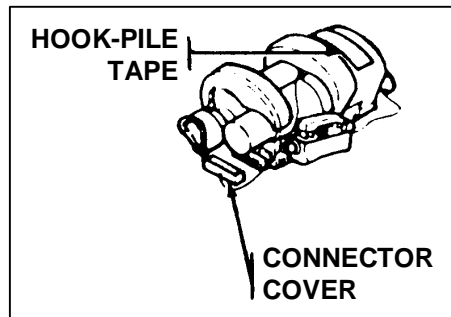


**Figure 4. Remove the connector cover from the round.**



**Figure 5. Remove the tracker from the carrying bag.**

- (1) Pull the carrying bag flap open and hold it open with the right hand.
- (2) Reach in, grasp the tracker by the telescope barrel, and remove it from the bag.
- c. Pull the connector cover from the tracker and secure it on the hook-pile tape strip on top of the forward shock absorber of the tracker (Figure 6).

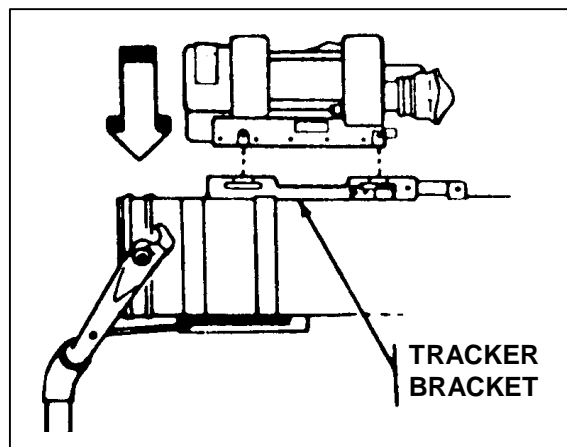


**Figure 6. Remove the connector cover from the tracker.**

**WARNING**

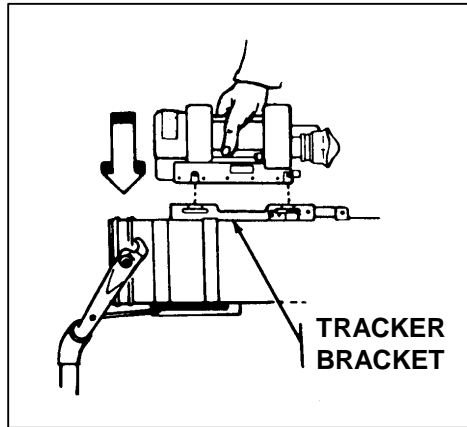
Ensure that the safety and trigger are not pressed while mating the tracker to the round.

- d. Place the tracker guide pins in the slots of the round's tracker bracket guide rails ([Figure 7](#)).
- e. Slide the tracker firmly to the rear, using both hands, until the spring clip locks the guide pins in place ([Figure 8](#)).



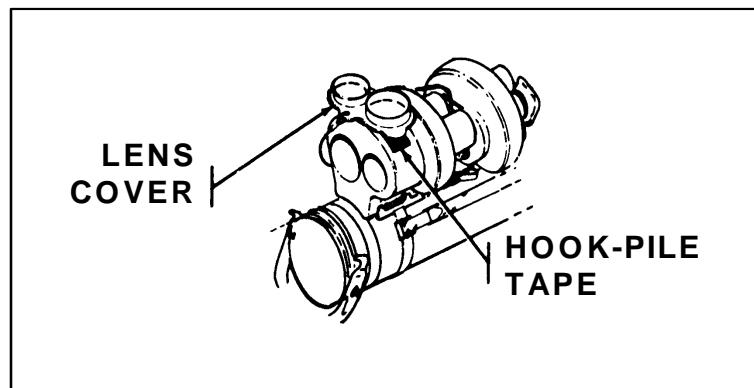
**Figure 7. Align tracker and tracker bracket.**



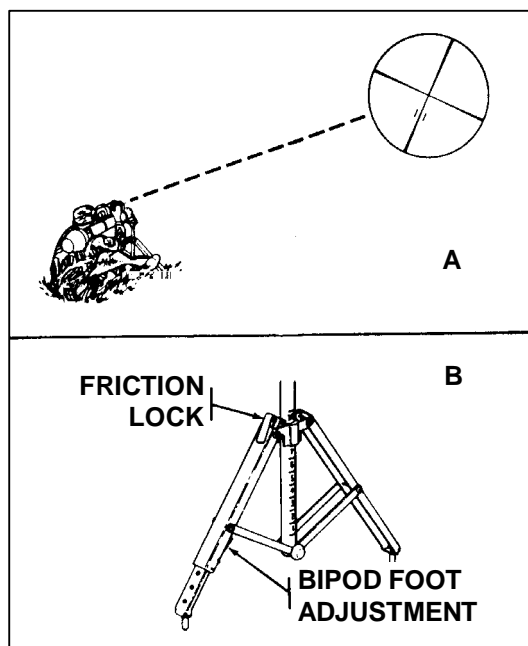


**Figure 8. Lock the tracker to the tracker bracket.**

- f. If the tracker will not mate to the round:
  - (1) Ensure that the connector covers on the round and on the tracker have been removed.
  - (2) Check the guide pins on the tracker to ensure that they are not bent. If they are, notify your supervisor.
  - (3) Check the tracker bracket on the round. If the tracker bracket is bent or distorted, secure a new round or notify your supervisor.
  - (4) Check the connectors of the tracker and round. If either is damaged, notify your supervisor.
- 3. To prepare for firing—
  - a. Remove the lens cover and secure it on the hook-pile tape strip on the front shock absorber of the tracker ([Figure 9](#)).
  - b. Assume a firing position and place the round on your shoulder.
  - c. Look through the tracker. If the reticle is tilted ([A, Figure 10](#)), adjust the bipod friction lock and foot adjust ([B, Figure 10](#)) and obtain a level sight picture.



**Figure 9. Remove the lens cover.**



**Figure 10. Level the sight picture.**

### EVALUATION PREPARATION

*Setup:* At the test site, provide all the materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier to prepare the M47 medium antitank weapon for firing.

### EVALUATION GUIDE

#### Performance Measures

#### Results

- |   |   |   |
|---|---|---|
| 1. Prepare the round.   | P | F |
| a. Place round under arm.                                       |   |   |
| b. Unsnap bipod retainer strap.                                 |   |   |
| c. Release and eject forward shock absorber.                    |   |   |
| d. Extend and lock bipod friction lock.                         |   |   |
| e. Lower round (until rear shock absorber rests on the ground). |   |   |
| 2. Mate the tracker to the round (day or night tracker).        | P | F |
| a. Remove connector cover.                                      |   |   |
| b. Remove tracker from carrying bag.                            |   |   |
| c. Secure connector cover to forward shock absorber.            |   |   |
| d. Place tracker guide pins in guide rail slots.                |   |   |

## EVALUATION GUIDE

### Performance Measures

### Results

- e. Lock tracker in place.
- f. If the tracker will not mate to the round:
  - (1) Check round and tracker connector covers.
  - (2) Check tracker guide pins.
  - (3) Check tracker bracket.
  - (4) Check tracker and round connectors.
- 3. Prepare for firing.
  - a. Remove and secure lens cover.
  - b. Assume firing position and place round on shoulder.
  - c. Look through tracker and obtain sight picture.

P F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

TM 9-1425-484-10

## OPERATE A NIGHT VISION SIGHT AN/TAS-5 071-052-0005

### CONDITIONS

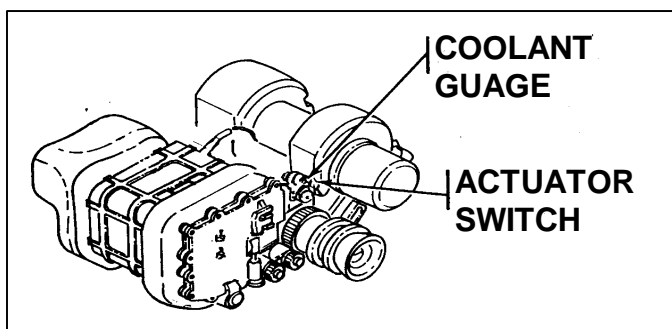
During darkness, given a night vision sight AN/TAS-5, an M222 round, a coolant cartridge, and a nightsight battery.

### STANDARDS

Prepare the sight for operation and correctly mount it on the M222 round; acquire a target by adjusting the sight controls without damaging the equipment.

### TRAINING AND EVALUATION Training Information Outline

1. Prepare the night tracker for use.
  - a. When removing the tracker from the rucksack, hold it by the firing mechanism.
  - b. Install the coolant cartridge:
    - (1) Locate the actuator switch on the right side of the coolant gauge. The switch has four positions ([Figure 1](#)). A decal on top of the tracker shows these positions.

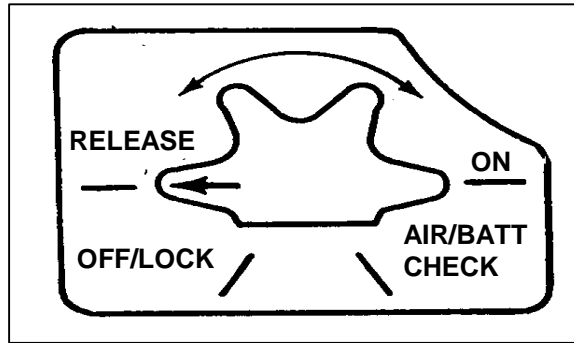


**Figure 1. Coolant gauge and actuator switch.**

#### CAUTION

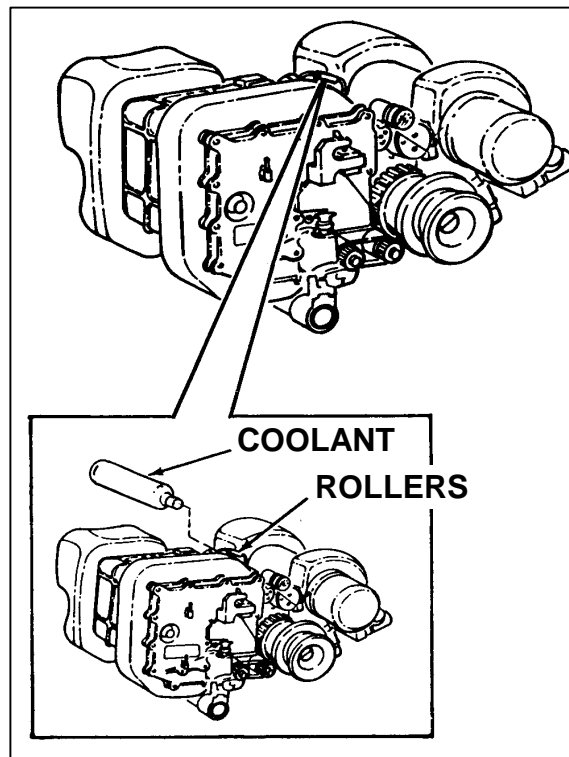
A coolant cartridge must always be installed on the night tracker except during cartridge exchange.

- (2) Place the actuator switch straight down. This is the RELEASE position ([Figure 2](#)).



**Figure 2. Night tracker actuator switch.**

- (3) Remove the coolant cartridge from the actuator assembly (Figure 3).



**Figure 3. Removal and installation of the coolant cartridge.**

**NOTE:** Return all empty coolant cartridges to unit supply for recharging.

- (4) Slide the new coolant cartridge in the front of the night tracker, under the rollers, and back into the actuator assembly. While holding the cartridge in place, rotate the actuator switch counterclockwise to the OFF/LOCK position (Figure 4).

c. Install the battery:

- (1) Move the battery retainer clip to the open position (Figure 5).
- (2) Align the battery over the battery guide pins (A, Figure 6).

(3) Slide the battery down onto the guide pins until the battery connector seats properly (B, Figure 6).

(4) Move the battery retainer clip over the battery into the closed position (Figure 7).

2. Perform operational checks.

a. Rotate the actuator switch counterclockwise from the OFF/LOCK position to the AIR/BATT CHECK position (Figure 8).

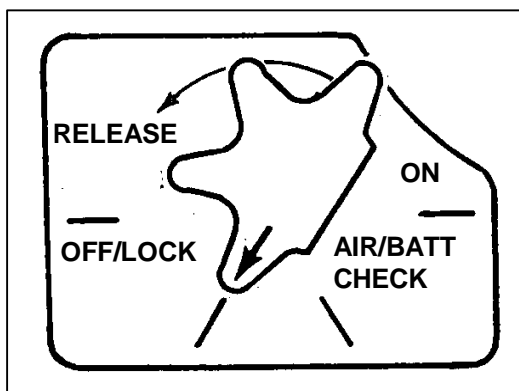


Figure 4. Locking of the coolant cartridge.

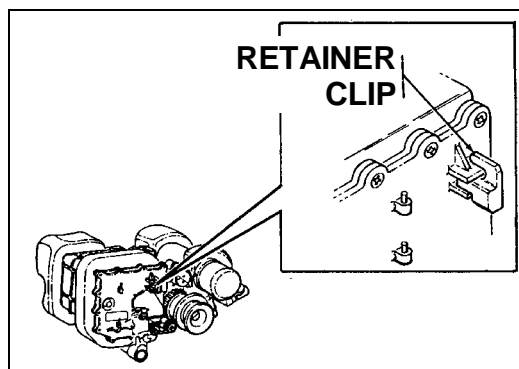


Figure 5. Battery retainer clip.

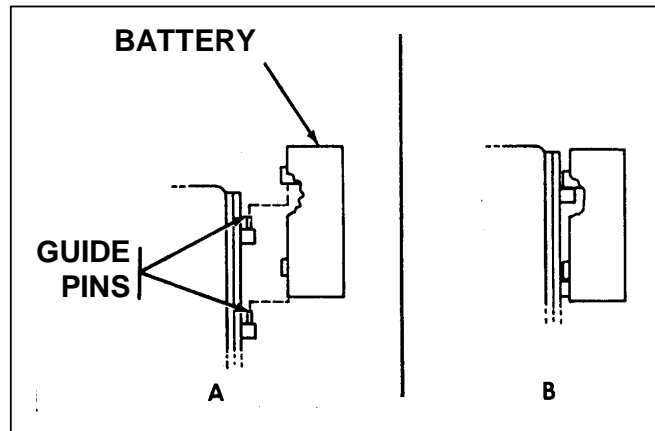


Figure 6. Battery guide pins.

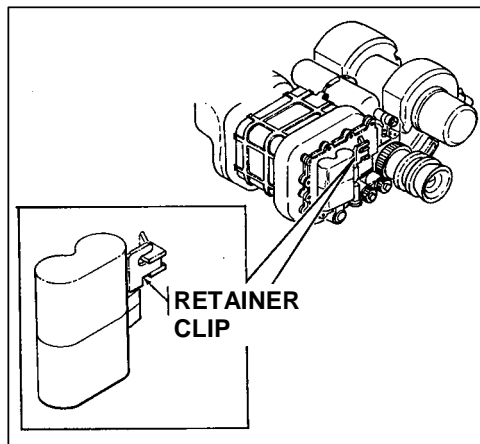


Figure 7. Closing of the battery retainer clip.

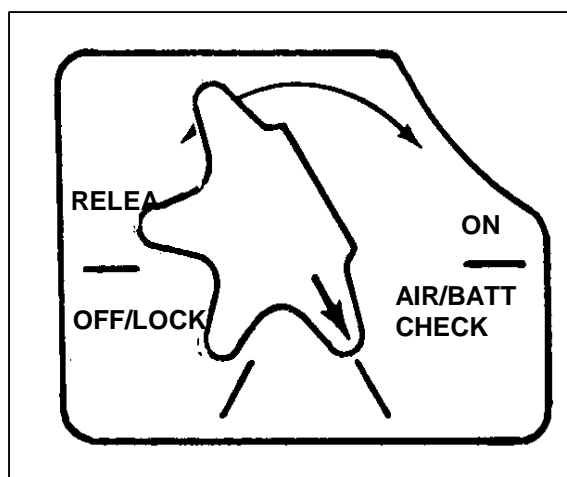
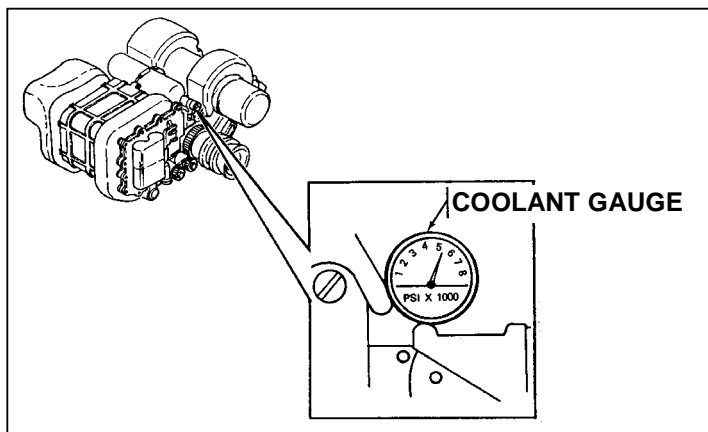


Figure 8. Actuator switch.

b. Observe the coolant pressure gauge. The gauge indicates from 1,000 PSI to 8,000 PSI. If the gauge reads less than 2,500 PSI, replace the coolant cartridge (Figure 9).

c. Put an eye to the eyepiece. If the battery monitor light comes on, 10 minutes of operating time is left. If the e coolant cartridge monitor light comes on, replace the coolant cartridge.

**NOTE:** A security shutter is molded into the eyepiece to prevent light from being emitted from the tracker. The shutter opens when the eye is pressed against the eyecup.



**Figure 9. Coolant pressure gauge.**

d. Remove the lens cover and secure it to the hook-pile tape strip on top of the tracker's front shock absorber.

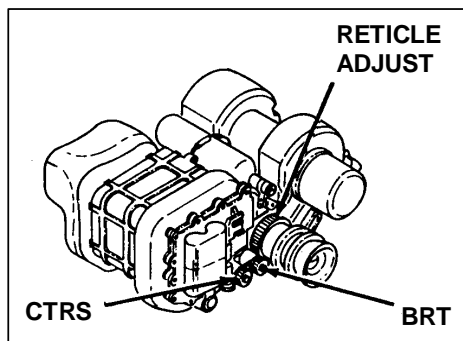
e. Move the actuator switch to the ON position and wait 15 seconds for cool down. Sight through the eyepiece and aim the night tracker on a scene with infrared contrast.

f. Turn the reticle adjust ring for the best focus of the reticle (Figure 10).

g. Adjust the brightness and contrast controls for best viewing.

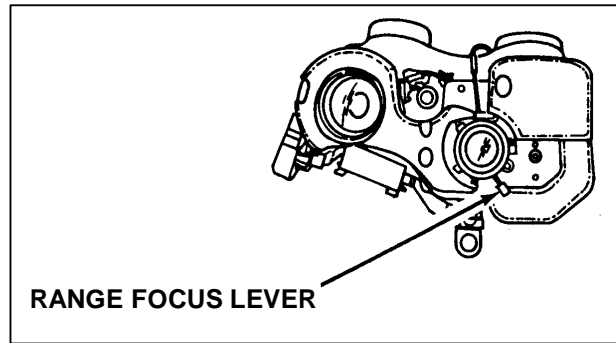
h. Adjust the range focus lever for the sharpest image (Figure 11).

i. Turn the actuator switch to the OFF/LOCK position and replace the lens cover.



**Figure 10. Reticle, brightness, and contrast controls.**





**Figure 11. Range focus lever.**

3. Mate the night tracker to the round.
  - a. Remove the connector cover from the connector on the night tracker.
  - b. Remove the connector cover from the connector on the round.
  - c. Place the tracker guide pins in the slots of the tracker bracket guide rails on the round.

**WARNING**

**Do not press the safety or the trigger while mating the tracker to the round.**

- d. Slide the tracker firmly to the rear, using both hands, until the spring clip locks the guide pins in place.
  - e. Remove the lens cover and secure it to the hook-pile tape strip.
  - f. The night tracker is ready to use.

**EVALUATION PREPARATION**

*Setup:* At the test site, provide two coolant cartridges, each containing over 2,500 PSI; a battery; a night tracker; and an expended round. Tell the soldier that he is to replace the coolant cartridge.

**NOTE:** Test personnel are responsible for removing the tracker from the round, the battery from the tracker, and for returning the tracker to the rucksack. The tracker and round are in the same starting condition for each soldier tested.

*Brief Soldier:* Tell the soldier to place the night tracker into operation and mate the tracker to the round.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Prepare a night tracker. a. Replace coolant cartridge. b. Install the battery.	P	F
2. Perform operational checks. a. Check coolant pressure. b. Check battery and coolant monitor lights. c. Adjust reticle. d. Adjust the brightness and contrast. e. Adjust the range focus. f. Replace the lens cover.	P	F
3. Mate the tracker to the round. a. Remove the connector covers on the tracker and round. b. Secure the tracker to the guide rails on the round.	P	F
4. Acquire target by adjusting the sight controls without damaging the equipment.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
None	TM 9-1425-484-10

## ENGAGE TARGETS WITH AN M47 MEDIUM ANTITANK WEAPON 071-052-0006

### CONDITIONS

Given a Dragon tracker mated to a round of ammunition, and actual or sized-to-scale targets.

### STANDARDS

Correctly determine if three targets are in range and if they are engageable.

### TRAINING AND EVALUATION Training Information Outline

1. Acquire the target.
  - a. Look through the tracker ([Figure 1](#)).
  - b. Use the sight adjusting ring to focus the tracker.
  - c. Rotate the eye guard to fit your face ([Figure 2](#)).

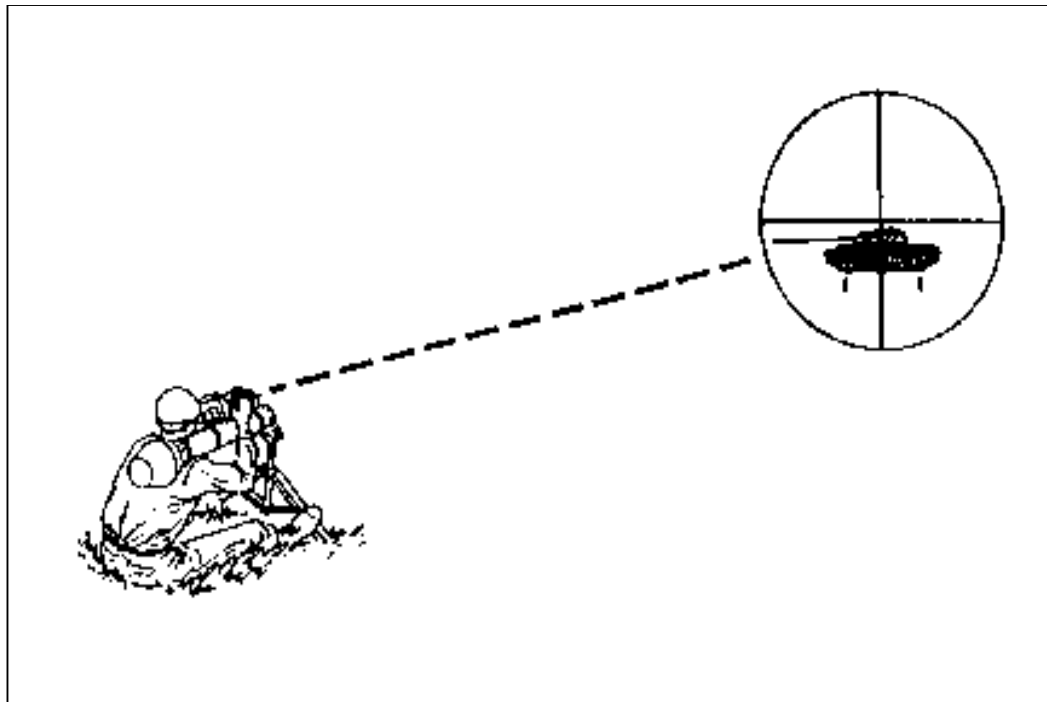
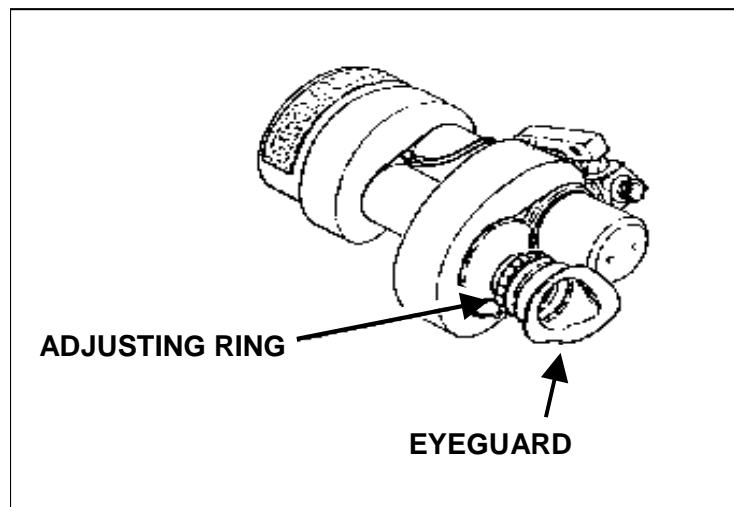
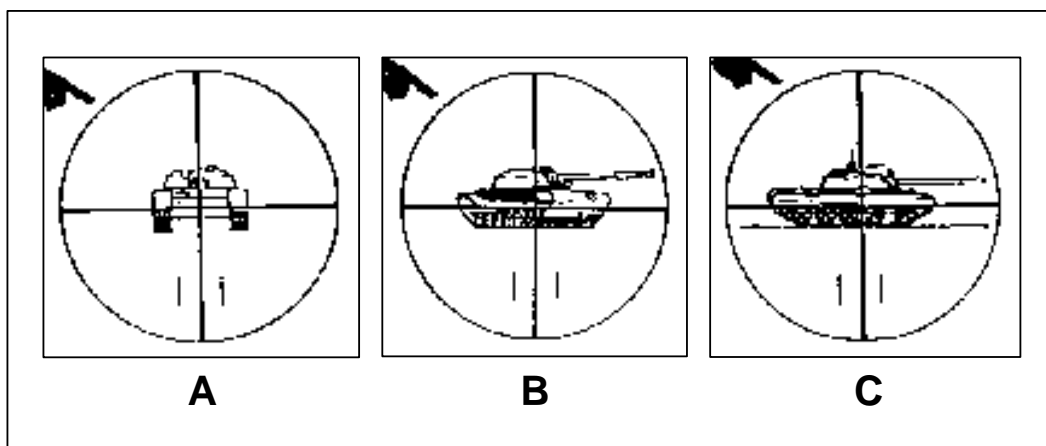


Figure 1. View through the tracker.



**Figure 2. Location of sight adjusting ring.**

2. Determine if the target is in or out of range and whether it is a frontal ([A, Figure 3](#)), flank ([B, Figure 3](#)), or oblique target ([C, Figure 3](#)).



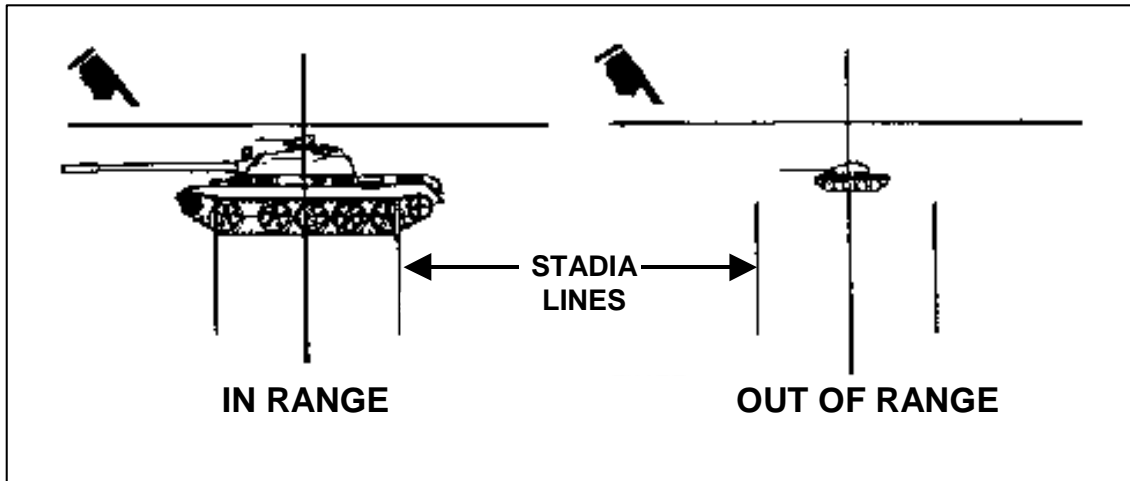
**Figure 3. Frontal, flank, and oblique targets.**

- a. Flanking targets (full stadia). Adjust the sight picture by moving the launcher to center the target between the stadia lines ([Figure 4](#)).

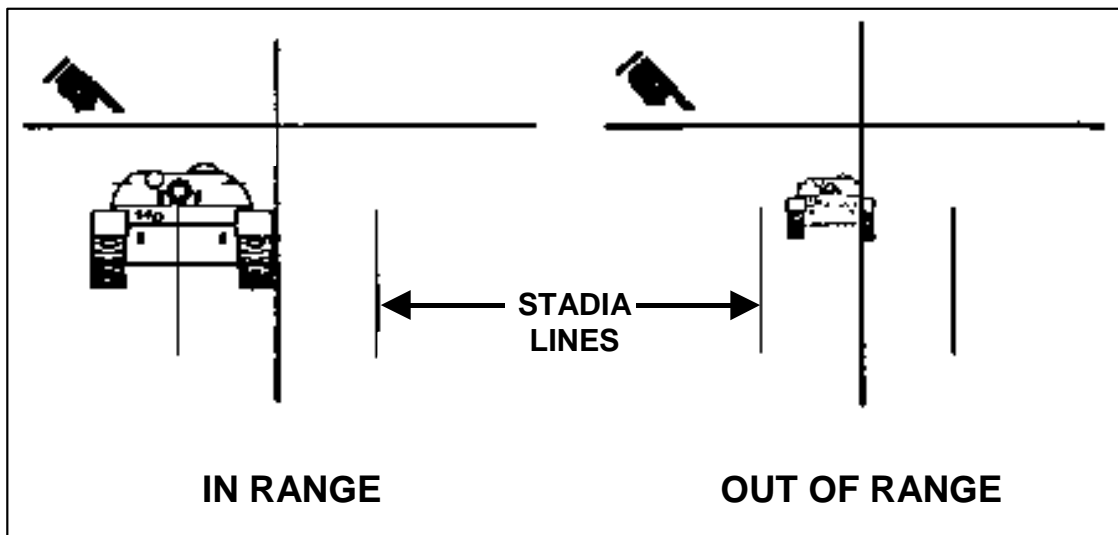
**NOTE:** At the maximum effective range of 1,000 meters, a target 20 feet (6.09 meters) long will touch both the larger stadia lines. Thus, a target that does not touch both stadia lines is beyond 1,000 meters.

- b. Frontal (head-on) or rear (going away) targets (half-stadia). Adjust the sight picture by moving the launcher. Align the vertical cross hair and one of the stadia lines on the target ([Figure 5](#)).

**NOTE:** At the maximum effective range of 1,000 meters, a target 10 feet (3.05 meters) wide will touch the center cross hair and one of the stadia lines. Thus, a target that exceeds the width between the center cross hair and one of the stadia lines is nearer than 1,000 meters, and one that does not touch both the cross hair and one of the stadia lines is farther than 1,000 meters.



**Figure 4. Range determination for flank target.**



**Figure 5. Range determination for frontal or rear target.**

c. Oblique targets.

(1) If more of the flank is visible than the front or rear of the target, use the full-stadia method.

(2) If more of the front or rear is visible than the flank, use the half-stadia method (Figure 6 and Figure 7).

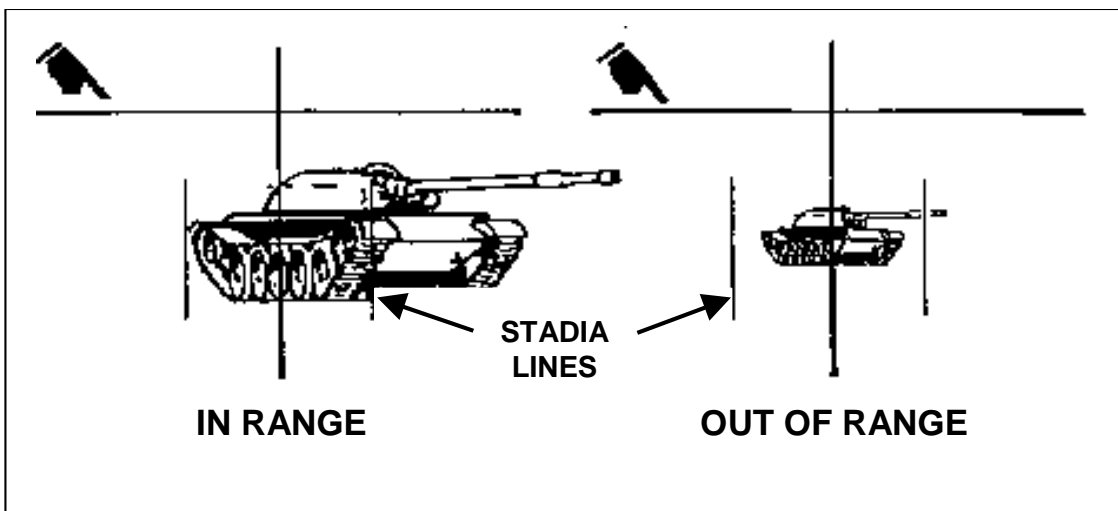


Figure 6. Range determination for oblique target, more flank visible.

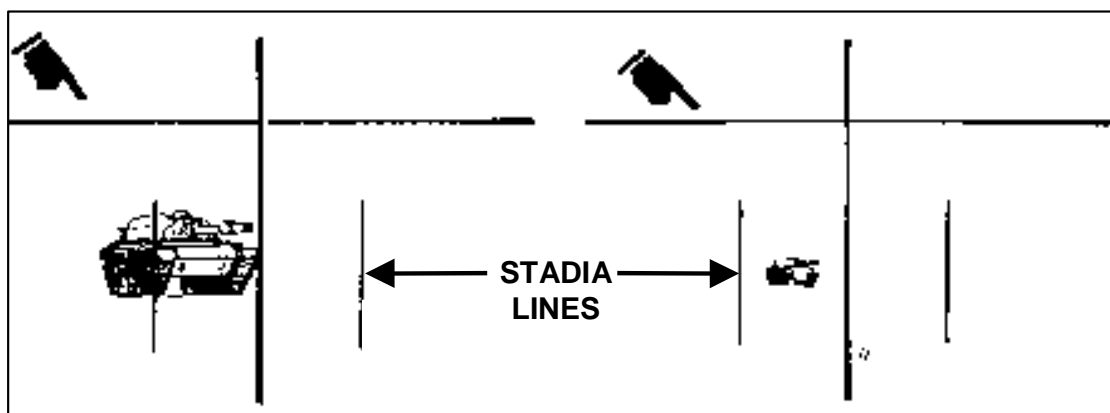


Figure 7. Range determination for oblique target, more front or rear visible.

3. Determine if the target is engageable (Figure 8).
  - a. If the vehicle may be able to reach cover to protect itself from your Dragon, then you have to determine whether you can hit the target before it does. Use the tracker sight to help you decide. Line it up directly in front of your target. If there are no obstructions or covered areas along the expected path of the target and the target is moving 35 MPH or less, you can successfully launch your missile and destroy the target.
  - b. If the target definitely cannot reach cover in time, place the cross hairs center of mass and fire (Figure 9).
  - c. If the target will definitely reach cover in time, do not fire (Figure 10).

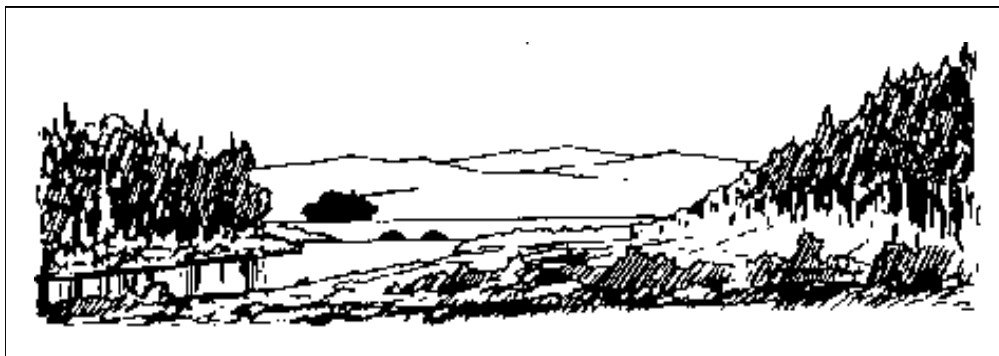


Figure 8. Target may or may not reach cover.

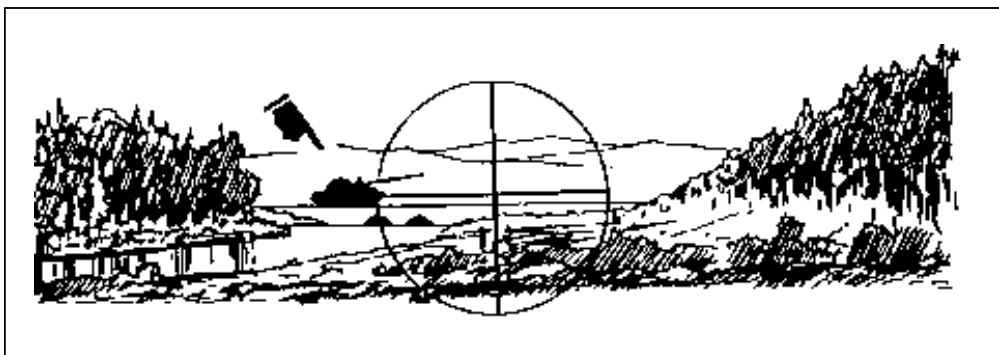


Figure 9. Target cannot reach cover in time.

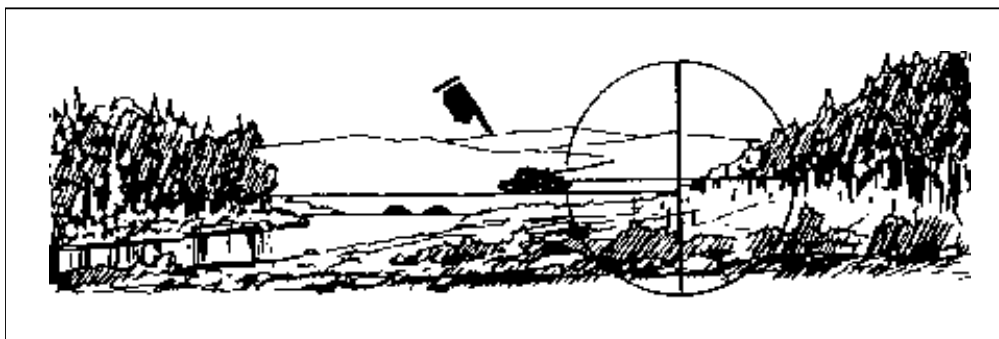


Figure 10. Target can reach cover in time.

### EVALUATION PREPARATION

*Setup:* At the test site, provide all materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier to determine if the given targets are engageable or not.

## EVALUATION GUIDE

Performance Measures	Results	
1. Acquire the target. <ul style="list-style-type: none"><li>a. Look through the tracker.</li><li>b. Use the sight adjusting ring to focus the tracker.</li><li>c. Rotate the eye guard to fit your face.</li></ul>	P	F
2. Determine if the target is in or out of range. <ul style="list-style-type: none"><li>a. Flanking targets (full stadia). Adjust the sight picture by moving the launcher to center the target between the stadia lines.</li><li>b. Frontal (head-on) or rear (going away) targets (half-stadia). Adjust the sight picture by moving the launcher. Align the vertical cross hair and one of the stadia lines on the target.</li><li>c. Oblique targets.<ul style="list-style-type: none"><li>(1) If more of the flank is visible than the front or rear of the target, use the full-stadia method.</li><li>(2) If more of the front or rear is visible than the flank, use the half-stadia method.</li></ul></li></ul>	P	F
3. Determine if the target is engageable. <ul style="list-style-type: none"><li>a. If the vehicle may be able to reach cover to protect itself from your Dragon, then you have to determine whether you can hit the target before it does. Use the tracker sight to help you decide. Line it up directly in front of your target. If there are no obstructions or covered areas along the expected path of the target and the target is moving 35 MPH or less, you can successfully launch your missile and destroy the target.</li><li>b. If the target definitely cannot reach cover in time, place the cross hairs center of mass and fire.</li><li>c. If the target will definitely reach cover in time, do not fire.</li></ul>	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
None	None



## PERFORM MISFIRE PROCEDURES ON AN M47 MEDIUM ANTITANK WEAPON 071-317-3306

### CONDITIONS

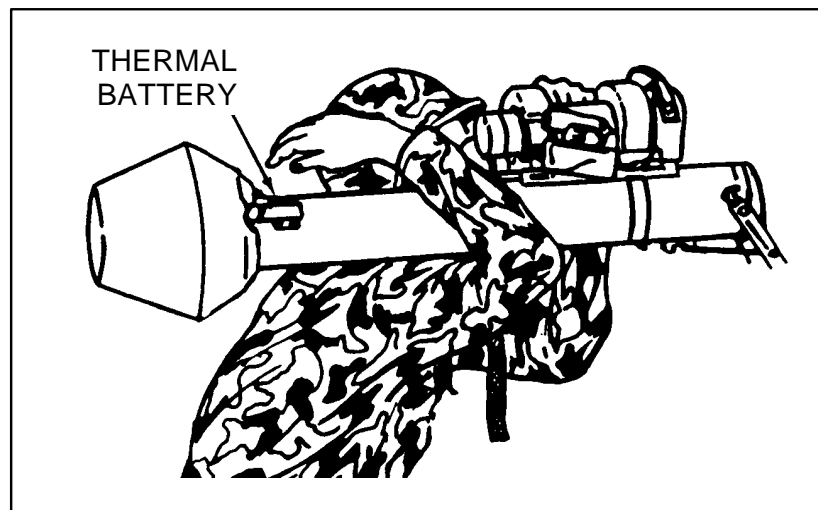
In a field environment, given an M47 medium antitank weapon (Dragon), a tracker, and a misfire situation.

### STANDARDS

Perform immediate action for an M47 with a cold and a hot thermal battery.

### TRAINING AND EVALUATION Training Information Outline

1. If the Dragon fails to fire, immediately resqueeze the trigger and continue tracking the target for 15 seconds.
2. If the round still has not fired, cautiously feel near the thermal battery ([Figure 1](#)).



**Figure 1. Check the thermal battery.**

3. When the thermal battery is *hot*, do the following:
  - a. Remove the tracker from the round and place the round on the ground away from your firing site. Keep the round pointed toward the enemy; advise friendly troops in your vicinity of the misfire.
  - b. Obtain a new round and mount the tracker on the new round.
  - c. If possible, acquire the previous target and continue with the mission.

4. When the thermal battery is *cold*, do the following:
  - a. Loosen, then remate the tracker to the round.
  - b. Track the target and try to fire again.
  - c. If the round fails to fire again, cautiously feel near the thermal battery.
  - d. If the battery is still cold, remove the tracker from the round and place the round on the ground away from your firing site. Keep the round pointed toward the enemy; advise friendly nearby troops of the misfire.
  - e. Mount the tracker on another round and continue with your mission.
  - f. If the new round also fails to fire, cautiously feel near the thermal battery. If the battery is cold, the tracker is probably defective.
  - g. If another tracker is available, replace the tracker and continue with the mission using unfired rounds.

### EVALUATION PREPARATION

*Setup:* At the test site, provide all the materials and equipment indicated in the task conditions.

*Brief Soldier:* Tell the soldier to perform immediate action procedures for a Dragon misfire, first for a cold thermal battery, then for a hot thermal battery.

### EVALUATION GUIDE

Performance Measures	Results	
1. Resqueeze the trigger and continue tracking the target for 15 seconds.	P	F
2. Feel near the thermal battery if the round still does not fire.	P	F
3. When the thermal battery is hot: <ol style="list-style-type: none"><li>a. Remove the tracker from the round.</li><li>b. Obtain a new round and remount the tracker.</li><li>c. Acquire the previous target and continue the mission.</li></ol>	P	F
4. When the thermal battery is cold: <ol style="list-style-type: none"><li>a. Loosen and remate the tracker to the ground.</li><li>b. Track the target and try to fire again.</li><li>c. Feel near the thermal battery if the round fails to fire.</li><li>d. If the battery is cold, remove the tracker from the round.</li><li>e. Mount the tracker on another round.</li><li>f. If a new round fails to fire and the thermal battery is cold, replace the tracker.</li></ol>	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

**Required**  
None

**Related**  
TM 9-1425-484-10

## **RESTORE AN M47 MEDIUM ANTITANK WEAPON TO CARRYING CONFIGURATION 071-052-0004**

### **CONDITIONS**

Given an M47 medium antitank weapon prepared for firing, and a requirement to restore it to the carrying configuration.

### **STANDARDS**

Remove the tracker and store it in the carrying bag; restore the round to a safe carrying configuration.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. To remove the tracker from the round, depress the spring clip on the tracker.
  - a. Replace the tracker lens cover.
  - b. Remove the tracker from the round, and replace the connector cover on the tracker.
  - c. Return the tracker to its carrying bag.
2. Restore the round to the carrying configuration.
  - a. Replace the forward shock absorber.
    - (1) Set the round in an upright position with the rear shock absorber resting on the ground.
    - (2) While pushing down lightly on the bipod, press the bipod brace toward the round to lift it out of the locking slot.
    - (3) Once the bipod brace is unlocked, push down on the bipod until the upper part of the bipod that attaches to the round is parallel with the muzzle of the launch tube.
    - (4) Align the cut-out portion of the forward shock absorber with the bipod at the launch tube muzzle.
    - (5) Push down on the shock absorber while lowering the bipod against the round. Ensure the upper part of the bipod engages the shock absorber.
    - (6) Retract the bipod legs and secure them to the round with the retainer strap.
      - b. Lift up on the forward shock absorber to ensure that it is secure.
3. Ensure the round is now in a safe-to-carry configuration.

## EVALUATION PREPARATION

*Setup:* At the test site, provide an expended M47 medium antitank weapon and tracker prepared for firing. Place the forward shock absorber on the ground next to the weapon.

*Brief Soldier:* Tell the soldier to dismount the tracker and return the weapon to the carrying configuration.

## EVALUATION GUIDE

Performance Measures	Results	
1. Remove the tracker.	P	F
a. Replace the tracker lens cover.		
b. Remove the tracker.		
c. Replace the connector cover.		
d. Place the tracker in the carrying bag.		
2. Restore the round to the carrying configuration.	P	F
a. Release the bipod brace.		
b. Partially collapse the bipod legs.		
c. Replace the forward shock absorber.		
d. Lock the forward shock absorber to the round.		
e. Secure the bipod legs to the round.		

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
None	TM 9-1425-484-10

## M136 LAUNCHER

### PREPARE AN M136 LAUNCHER FOR FIRING 071-054-0001

#### CONDITIONS

Given an M136 launcher (AT4) and a requirement to prepare it for firing.

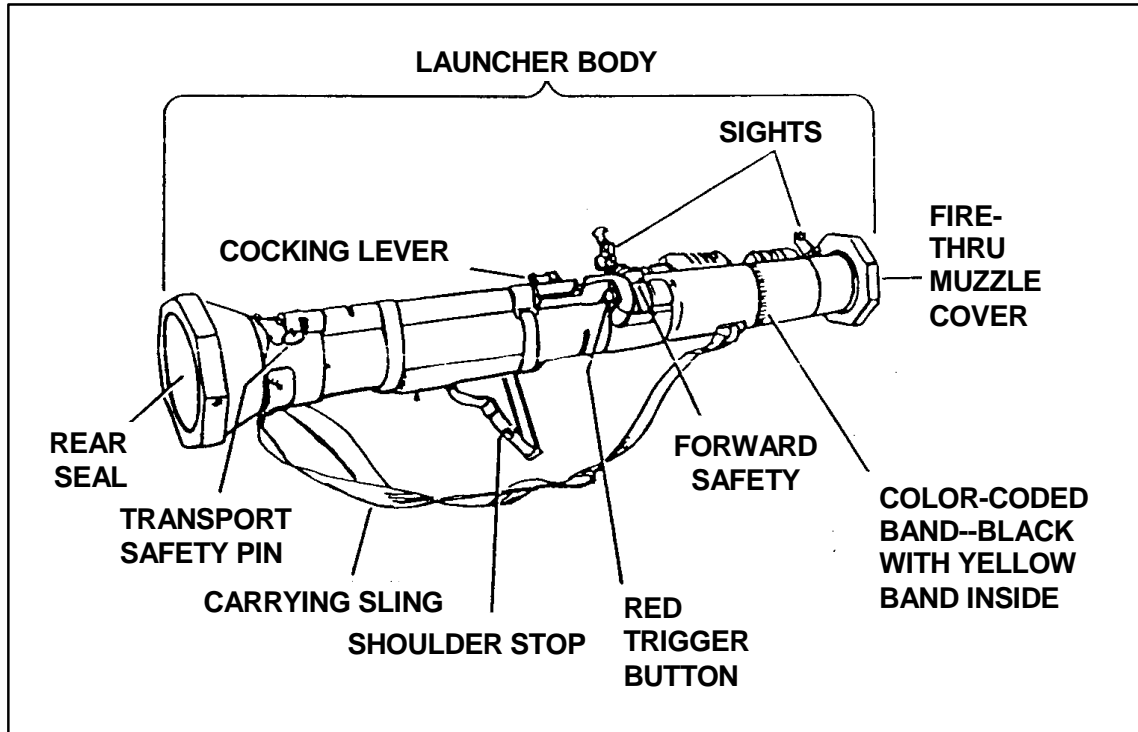
#### STANDARDS

Perform prefire checks on the M136 AT4 and prepare the round for firing.

#### TRAINING AND EVALUATION Training Information Outline

1. Perform the prefire checks. Because the M136 launcher is issued as a round of ammunition rather than as a weapon, the launcher is completely sealed. Therefore, inspection is limited to visual examination of the external components. The overall condition of the launcher should be inspected before it is used ([Figure 1](#)). The firer should ensure—

- a. The transport safety pin is in place and fully seated, and the lanyard is attached.
- b. The cocking lever is in the SAFE position and is folded down.
- c. The fire-through muzzle cover is intact. If the seal is torn, it should be removed to ensure that no foreign objects have gotten into the launcher.
- d. The launcher's color-coded band is the correct color: *black* for high-explosive antitank; *gold* for target-practice tracers; and *blue* for field-handling trainers.
- e. The sights function properly. Open the sight covers to ensure the sights pop up and are not damaged.
- f. The red safety catch does not move when depressed.
- g. The rear seal is not damaged.
- h. The shoulder stop is not broken or damaged and it unsnaps and folds down.
- i. The carrying sling is not frayed and is attached to the launcher.
- j. The launcher body has no cracks, dents, or bulges.



**Figure 1. Parts of the M136 launcher to be inspected.**

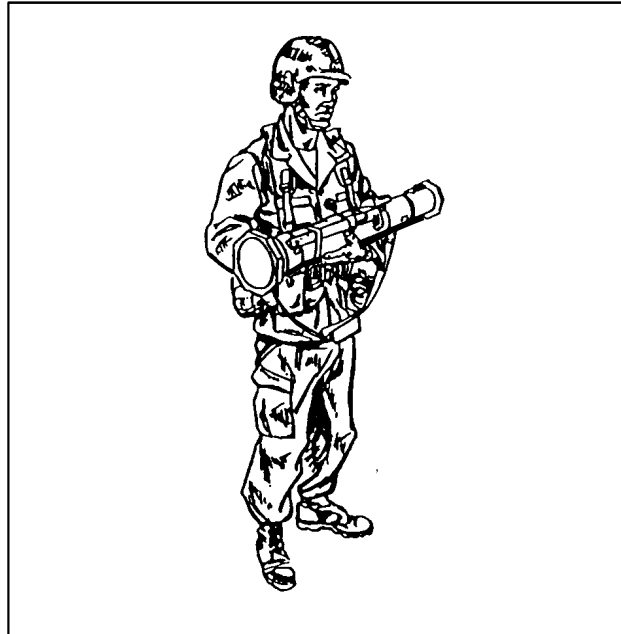
2. Prepare the launcher for firing. Preparation procedures are—
  - a. Remove the launcher from the carrying position and cradle it with the left arm (Figure 2).
  - b. While cradling the launcher, pull the transport safety pin with the right hand and release it (Figure 3).

**NOTE:** Ensure the transport safety pin is attached to the launcher by its lanyard.

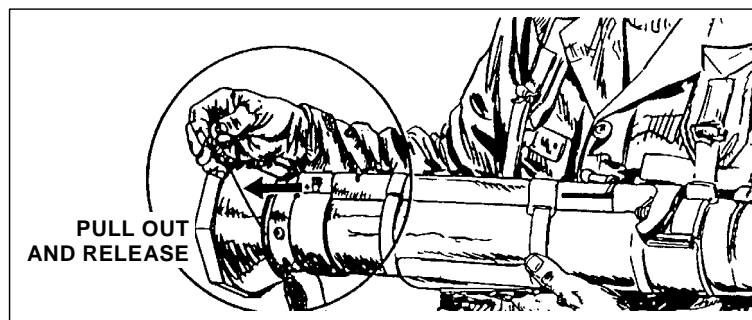
- If the launcher has no lanyard, place the transport safety pin in your pocket.
- If the launcher remains unfired, reinsert the transport safety pin.

### **WARNINGS**

- **Make sure personnel wear earplugs.**
- **Point the weapon toward the target.**
- **Clear the backblast area.**

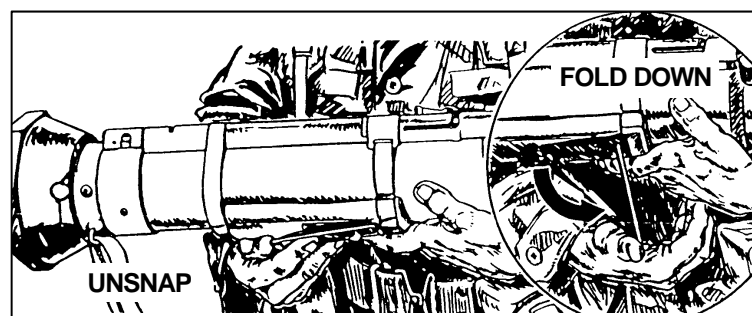


**Figure 2. Cradle position.**



**Figure 3. Removing the transport safety pin.**

- c. Unsnap and unfold the shoulder stop ([Figure 4](#)).



**Figure 4. Unsnapping the shoulder strap.**

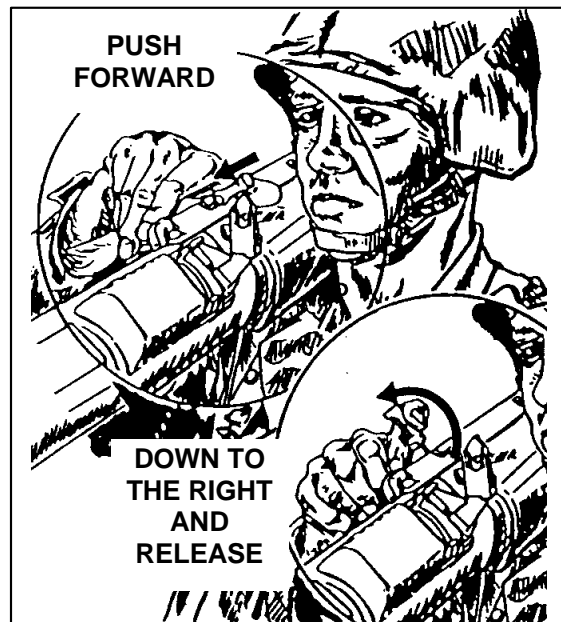


- d. With the shoulder stop in position, place the launcher on the right shoulder.
- e. With the launcher on the right shoulder and supported with the left hand, release the front sight by pressing down on the sight cover and sliding it to the rear. Release the rear sight by pressing down on the cover and sliding it forward. Sliding the covers off allows the sights to pop up.
- f. Check backblast area.
- g. Cock the launcher by unfolding the cocking lever with the right hand. Place the thumb of the right hand under the cocking lever. Grip the front of the firing mechanism for support. Push the cocking lever forward and down to the right. Let the cocking lever slide back ([Figure 5](#)).

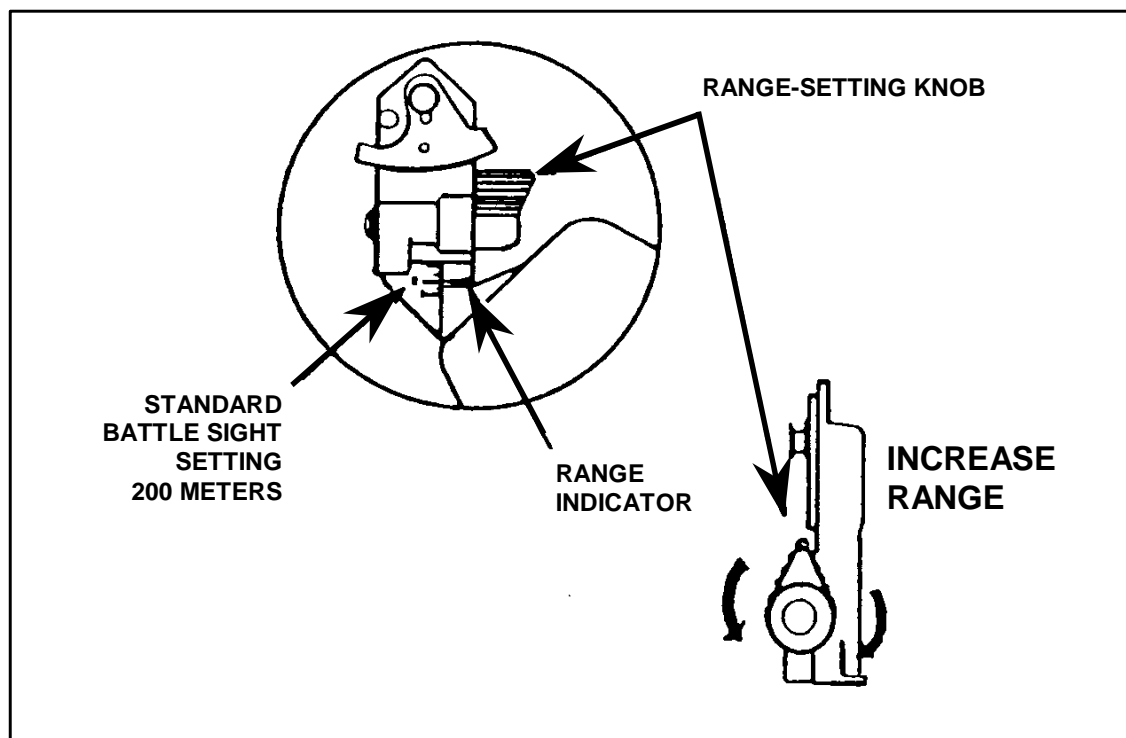
**CAUTION**

Do not refold the cocking lever. Doing so interferes with the function of the firing mechanism.

- h. Adjust the rear sight for the required range.
  - (1) When closing the sight cover, set the sight on a range of 200 meters. Therefore, when the rear sight is uncovered, the battlesight setting is 200 meters. If the range to the target is more than 250 meters, adjust the sight to the range. When the range is 250 meters or less, no sight adjustment is required ([Figure 6](#)).
  - (2) To adjust the rear sight range setting to more than 200 meters, turn the range knob clockwise (toward the muzzle). To decrease the range, turn the range knob counterclockwise (toward the gunner). There is a click at each 50-meter increment; this sound aids you during limited visibility ([Figure 6](#)).



**Figure 5. Cocking the launcher.**



**Figure 6. Adjusting the rear sight.**

### EVALUATION PREPARATION

*Setup:* At the test site, provide an expended AT4, or a tracer trainer in the carrying configuration; have the soldier place it in the carrying position. Tell the soldier the range to the target. Ask the soldier when the rear sight requires adjustment.

*Brief Soldier:* Tell the soldier to prepare the launcher to fire. Tell the soldier that he will be required to answer questions about the launcher.

### EVALUATION GUIDE

#### Performance Measures

#### Results

1. Perform the prefire checks.
  - a. Check the transport safety pin.
  - b. Ensure the cocking lever is on SAFE.
  - c. Check the fire-through muzzle cover.
  - d. Check the color-coded band.
  - e. Check the front and rear sights.
  - f. Check the red safety catch.
  - g. Check the rear seal.

P      F

## EVALUATION GUIDE

Performance Measures	Results
<ul style="list-style-type: none"> <li>h. Check the shoulder stop.</li> <li>i. Check the carrying sling.</li> <li>j. Check the body of the launcher.</li> </ul>	
2. Prepare the launcher for firing.	P      F
<ul style="list-style-type: none"> <li>a. Remove the transport safety pin.</li> <li>b. Unsnap and unfold the shoulder stop.</li> <li>c. Place the launcher on the right shoulder.</li> <li>d. Release the front and rear sights.</li> <li>e. Check the backblast area.</li> <li>f. Cock the launcher.</li> <li>g. Adjust the rear sight.</li> </ul>	

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
None	FM 23-25 TM 9-1340-886-12

## ENGAGE TARGETS WITH AN M136 LAUNCHER

### 071-054-0004

#### CONDITIONS

Given an M136 launcher (AT4) prepared for firing, engageable targets, and a requirement to engage such targets.

#### STANDARDS

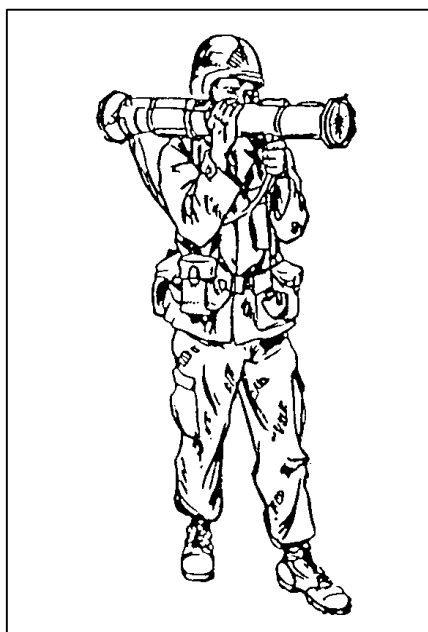
Destroy or disable the target with the M136 launcher.

#### TRAINING AND EVALUATION

##### Training Information Outline

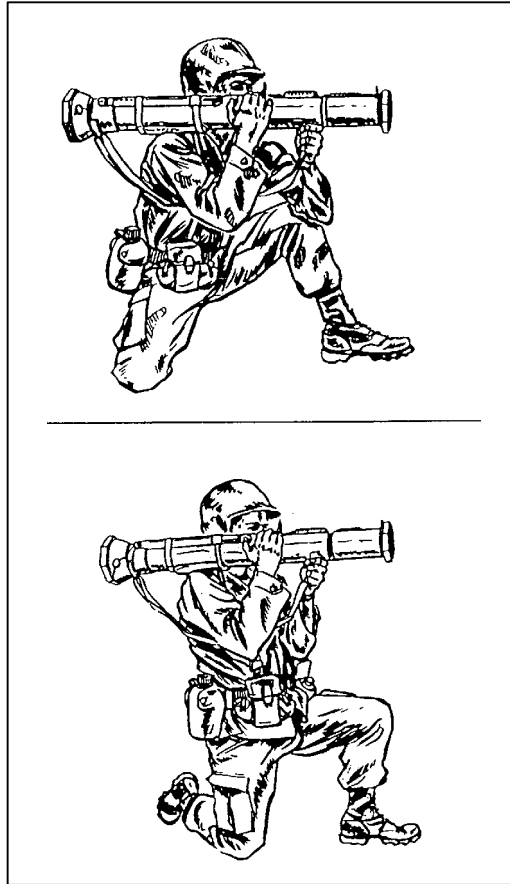
**NOTE:** The launcher can only be fired from the right shoulder.

1. Firing position.
  - a. Four types of firing positions are used when firing the M136 launcher.
    - (1) The standing position (Figure 1).



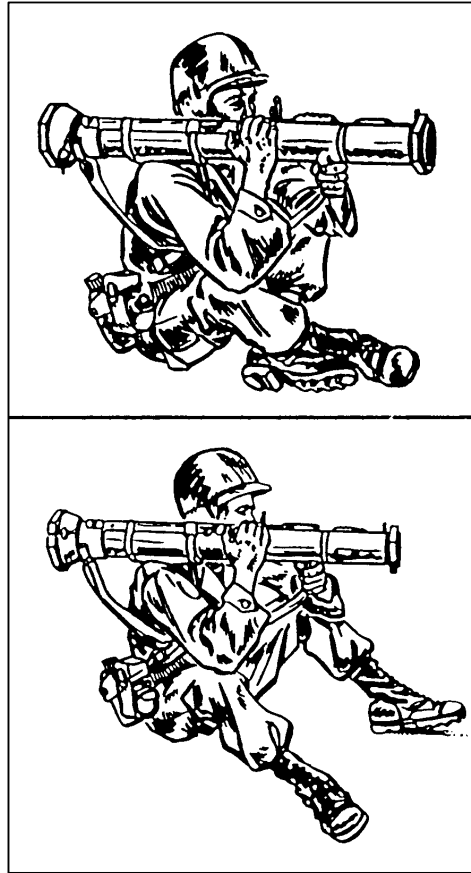
**Figure 1. Standing position.**

- (2) The kneeling position with two variations (Figure 2).



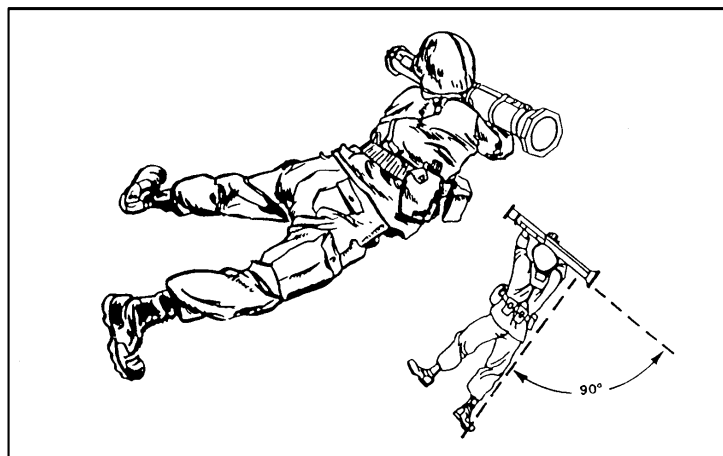
**Figure 2. First and second kneeling positions.**

(3) The sitting position with two variations ([Figure 3](#)).



**Figure 3. First and second sitting positions.**

(4) The prone position ([Figure 4](#)).



**Figure 4. Prone position.**

2. Use of the sights.

a. Determine the range to the target. If the range is 250 meters or less, do not adjust the rear sight. If the range is more than 250 meters, adjust the rear sight to the required range.

**WARNING**

**Do not place the eye against the rear sight when firing. Recoil may cause injury to the eye.**

b. Obtain the correct sight picture (Figure 5). Align and properly place the sights in relation to the target. In Figure 5, notice that the top center of the front sight posts are in the center of the rear sight peephole. Ensure that the white line on the front sight is just inside the peephole.

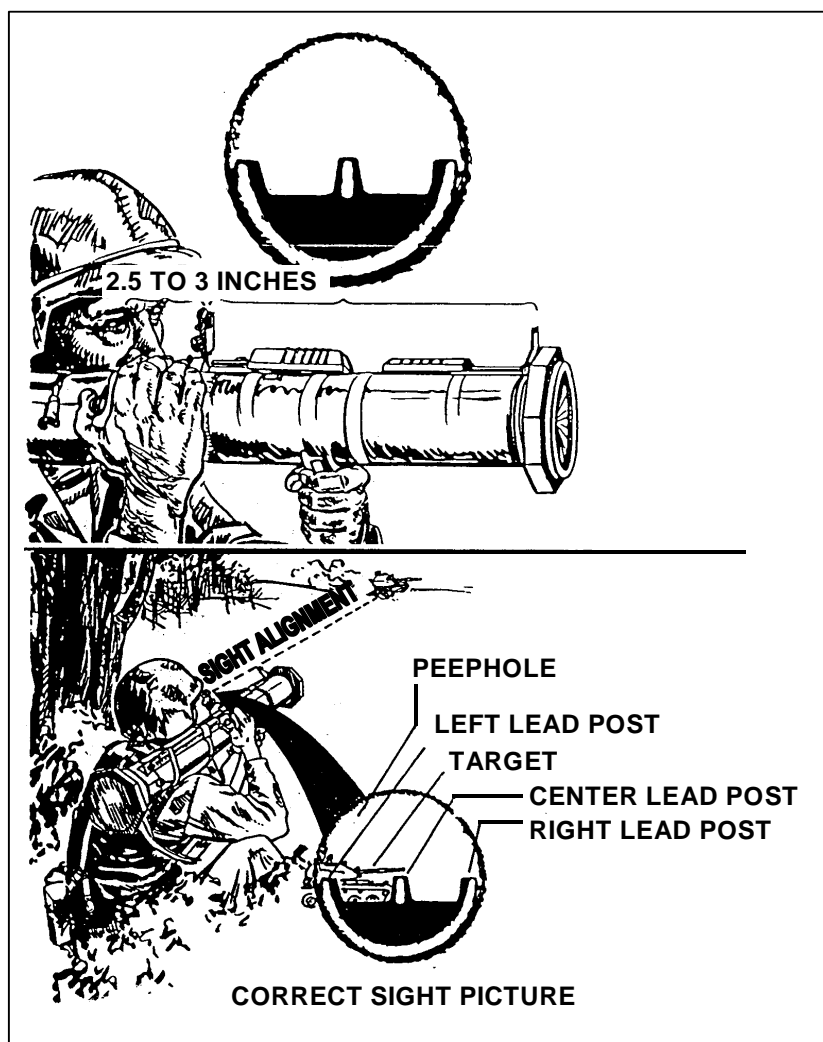


Figure 5. Correct sight picture.

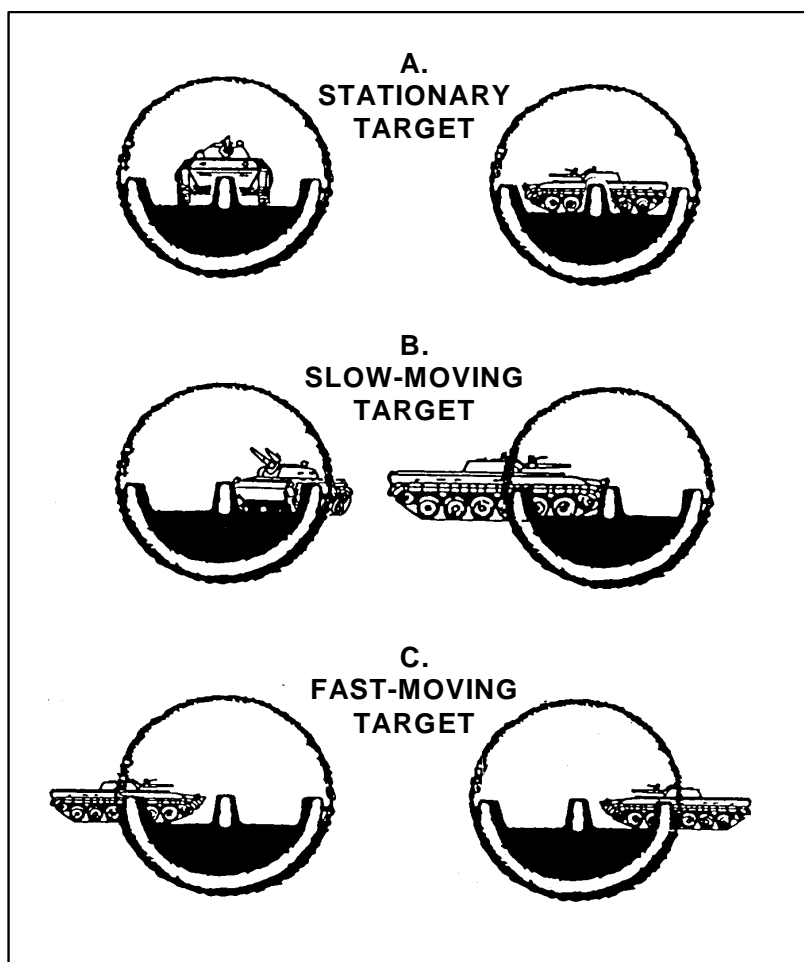
(1) Stationary targets. Place the center post at the center of visible mass (A, Figure 6). This same procedure also applies for vehicles that are proceeding directly toward or away from the firer.

(2) Slow moving targets (less than 10 miles per hour). Place the center post on the front leading edge of the vehicle (B, Figure 6). This procedure also applies to vehicles moving at an oblique (at all speeds).

(3) Fast moving targets (more than 10 mph).

(a) If the vehicle is moving from right to left, place the right hand lead post at the center of mass (C, Figure 6).

(b) If the vehicle is moving from left to right, place the left hand lead post at the center of mass (C, Figure 6).



**Figure 6. Correct placement of the front sight lead posts.**

### 3. Methods of engagement.

a. Single firing. In single firing, a target is engaged by one soldier firing one launcher with no succeeding shots (Figure 7). This method should be used only at ranges of 200 meters or less.



b. Sequence firing. In sequence firing, the target is engaged by one soldier equipped with two or more launchers (Figure 8). He observes the impact of the first round. If it is a hit, he continues to fire until the target is destroyed. If the first round was a miss, the soldier applies burst-on-target corrections until the target is hit.

**WARNING**

Ensure each firer is clear of the other's backblast area.



Figure 7. Single firing.

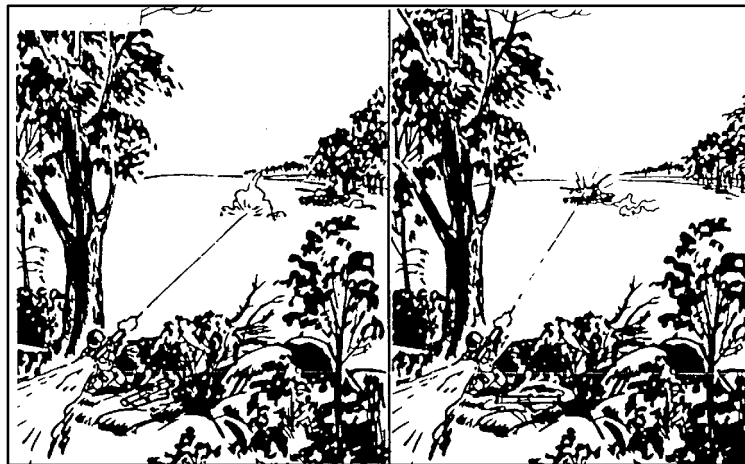


Figure 8. Sequence firing.

c. Pair firing. In pair firing, two soldiers equipped with two or more rounds each engage a single target (Figure 9). The soldier who sees the target first identifies it, announces the estimated range and the lead that he will use—

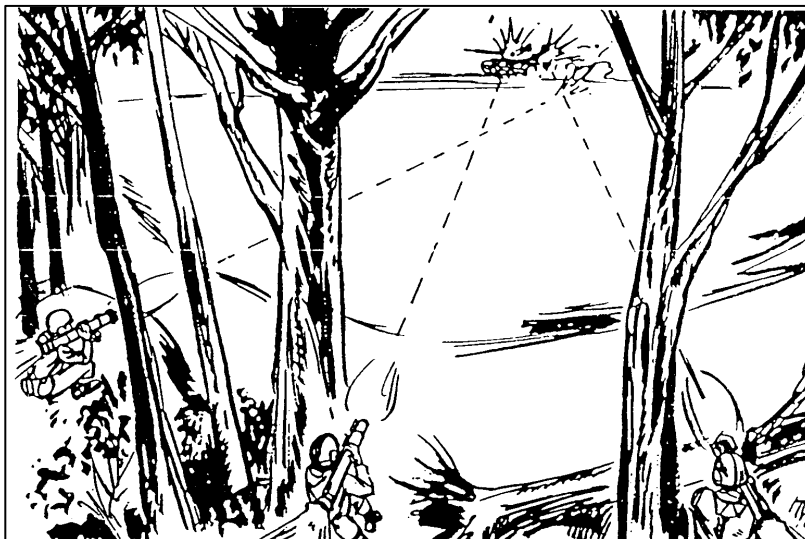
**EXAMPLE:** “BMP, one five zero meters, fast target”

...then he fires. The second soldier observes the impact and announces a revised estimate of range and lead (if appropriate) and fires. Each soldier continues exchanging range and lead information until the target is destroyed.



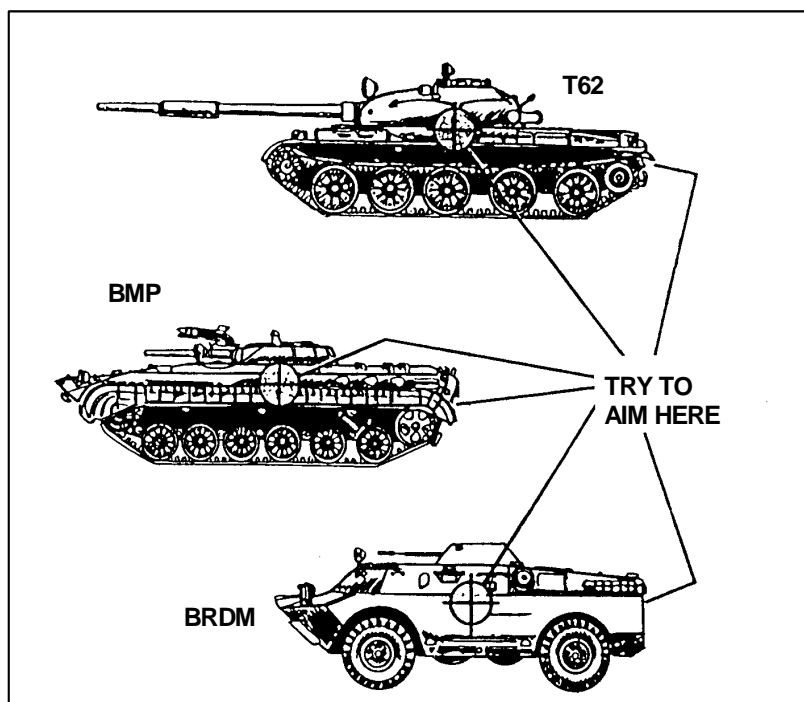
**Figure 9. Sequence firing by a pair of soldiers.**

d. Volley firing. In volley firing, a single target is engaged by more than one soldier using the same sight data to fire one or more launchers (Figure 10). Volley firing should be used when the range to the target is known. Since more rounds are fired at the target, using this method increases the probability of hitting the target and obtaining a kill.



**Figure 10. Volley firing.**

4. Target vulnerability.
  - a. An armored vehicle usually has its heaviest armor on the front slopes.
  - b. Gunners should try to engage the armored vehicle's weak points, which are the sides and the rear ([Figure 11](#)).



**Figure 11. Vulnerable points on an armored vehicle.**

## EVALUATION PREPARATION

*Setup:* At the test site, provide the soldier with a tracer trainer, targets to be engaged, a replica of the sights, and pictures of the vehicles.

*Brief Soldier:* Tell the soldier which firing position to use and which target to engage. Tell him that he must answer questions about firing the launcher.

## EVALUATION GUIDE

Performance Measures	Results	
1. Assume the given firing position. a. Standing. b. Kneeling. c. Sitting. d. Prone.	P	F
2. Adjust the rear sight to the range when required.	P	F
3. Use the correct sight placement to engage the targets. a. Stationary targets. b. Slow-moving targets. c. Fast-moving targets. d. Oblique-moving targets. e. Head-on or rear targets.	P	F
4. Answer the questions on the methods of engagement. a. Single firing. b. Sequence firing. c. Pair firing. d. Volley firing.	P	F
5. Answer the questions on a target's weak points.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

FM 23-25  
TM 9-1340-886-12

## **PERFORM MISFIRE PROCEDURES ON AN M136 LAUNCHER**

### **071-054-0003**

#### **CONDITIONS**

Given an armed M136 launcher (AT4) that has misfired.

#### **STANDARDS**

Apply misfire procedures so that the AT4 can be fired, or ensure the weapon cannot fire and inform the supervisor of the misfire.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

1. When the launcher fails to fire, immediately shout MISFIRE.
2. Continue to hold the launcher pointed in the area of the target.
3. Immediately check back blast area to ensure it is clear.
4. Recock the firing mechanism; aim, fully depress and hold down the red safety catch, and press the trigger.
5. If the launcher still fails to fire, repeat steps 1 through 4 above.
6. If the launcher again fails to fire:
  - a. Release the red safety catch and return the cocking lever to the SAFE position.
  - b. Remove the launcher from the shoulder while keeping the muzzle pointed toward the target area.
  - c. While cradling the launcher with the left arm, reinsert the transport safety pin.

**NOTE:** In a training situation only, place the launcher on your shoulder and keep it oriented on the target area for at least 2 minutes.

- d. Carefully lay the launcher on the ground with sights up and muzzle pointed toward the target area.
- e. Notify supervisor.

**NOTE:** In a training situation only, after inserting the transport safety pin, wait 2 minutes. Keep the launcher toward the target area.

**WARNING****Do not transport a launcher that has misfired.****EVALUATION PREPARATION**

*Setup:* At the test site, provide an expended AT4 or a tracer trainer in the ready-to-fire configuration.

*Brief Soldier:* Tell the soldier to assume a correct standing, ready-to-fire position with the launcher. Tell the soldier to go through the firing procedure. Tell him to go through the misfire procedures.

**NOTE:** Score performance measures in sequence.

**EVALUATION GUIDE**

Performance Measures	Results	
1. Shout MISFIRE.	P	F
2. Keep launcher oriented on target area.	P	F
3. Check the backblast area.	P	F
4. Recock, aim, and try to fire.	P	F
5. If the launcher fails to fire the second time, repeat Steps 1 through 4.	P	F
6. If the launcher again fails to fire—	P	F
a. Keep the muzzle pointed toward the target area.		
b. Reinsert the transport safety pin.		
c. Carefully laid the launcher on the ground with sights up and muzzle pointed toward the target area.		
d. Notify supervisor.		

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

FM 23-25

TM 9-1340-886-12

## **RESTORE AN M136 LAUNCHER TO CARRYING CONFIGURATION 071-054-0002**

### **CONDITIONS**

Given an M136 launcher (AT4) prepared for firing and the requirement to restore the launcher to carrying configuration.

### **STANDARDS**

Restore the launcher to a safe carrying configuration without damaging the equipment.

### **TRAINING AND EVALUATION Training Information Outline**

1. When the launcher is prepared for immediate firing but is not fired, it is taken out of operation as follows:
  - a. If the gunner is to remain in the same position —
    - (1) He releases the red safety catch (this step applies only if the firing sequence has proceeded to this point).
    - (2) He returns the cocking lever to the SAFE (uncocked) position by pushing it up and to the left, then pulling it rearward. He folds the cocking lever down.
    - (3) Keeping the launcher pointed at the target area, he removes the launcher from his shoulder.
    - (4) With the launcher cradled in his left arm, he replaces the transport safety pin.
  - b. If the gunner is to move to another position, in addition to the steps shown above, he must—
    - (1) Return the rear sight to the battlesight setting of 200 meters, fold down the front and rear sights, and close the sight covers.
    - (2) Fold the shoulder stop and snap it back into position.

#### **CAUTION**

The rear sight may be damaged if it is not returned to a battlesight setting of 200 meters before closing the sight cover.

2. The launcher is now in the carrying configuration and is safe and ready to transport.

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide an expended AT4 or a tracer trainer. The AT4 or tracer trainer is in the ready to fire configuration.



*Brief Soldier:* Tell the soldier to assume a correct standing, ready-to-fire position with the launcher. Once he has assumed the firing position, tell him to return the launcher to the carrying configuration.

**NOTE:** The performance measures are scored in sequence.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Release the red safety catch.	P	F
2. Return the cocking lever to the SAFE position.	P	F
3. Remove the launcher from the shoulder and cradle it with the left arm.	P	F
4. Replace the transport safety pin.	P	F
5. Return the rear sight to the battlesight setting.	P	F
6. Fold and cover the sights.	P	F
7. Fold the shoulder stop and snap it in place.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
None	FM 23-25 TM 9-1340-886-12

## **MINES AND DEMOLITIONS**

### **LOCATE MINES BY VISUAL MEANS 051-192-1021**

#### **CONDITIONS**

Given a field location suspected of having mines and trip wires.

#### **STANDARDS**

Locate possible mine sites and visually search suspected areas for mines and trip wires.  
Do not overlook any visible mines, parts of mines, or trip wires.

#### **EVALUATION PREPARATION**

*Setup:* Simulate a mined and trip-wired area.

*Brief Soldier:* Tell the soldier to look at the terrain and visually locate possible mined and trip-wired areas.

#### **EVALUATION GUIDE**

##### **Performance Measures**

##### **Results**

- |  |   |   |
|--|---|---|
| 1. Visually locate possible mine sites by locating the following areas:                                | P | F |
| a. Likely avenues of approach.   |   |   |
| b. Key intersections and turnouts.   |   |   |
| c. Trails, paths, and cleared spots in wooded areas.   |   |   |
| d. Approaches and exits to bridges, fords, and tunnels.  |   |   |
| e. Wood lines.   |   |   |
| f. Depressions and ditches.  |   |   |
| g. Open fields or grassland.   |   |   |
| 2. Visually search possible mine sites for suspected mines and trip wires.                             | P | F |
| a. Loose dirt, tall grass, trip wires, and any disturbed ground in or around helicopter landing sites. |   |   |
| b. Signs of road repairs—holes filled with asphalt or other material.                                  |   |   |
| c. Mud smears, grass, sticks, loose dirt, dung, or other material on roads.                            |   |   |
| d. Shoulders of roads at likely ambush sites.  |   |   |
| e. Trip wires near known or suspected AT mines.  |   |   |
| f. Signs placed in trees, on posts, or on stakes.  |   |   |
| g. Tunnels under roads.  |   |   |

**EVALUATION GUIDE****Performance Measures****Results**

- h. Any unusual or out of place material.
  - i. Wilted plants or brush.
  - j. Souvenirs such as flags, equipment, and supplies.
  - k. Areas that local civilians avoid.
  - l. Culverts and bridges.
3. Report all suspected areas to the team leader/squad leader. P F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

None

**Related**

FM 20-32

## NEUTRALIZE MINES

### 051-193-1025

#### CONDITIONS

Given an area where friendly or enemy mines have been located, demolition equipment, explosives, material for tripod (or A-frame), a 50-meter rope (or wire) with or without grapnel, and instructions on the method of neutralization to be used.

#### STANDARDS

Remove or destroy mines in place without injuring personnel.

#### EVALUATION PREPARATION

*Setup:* Provide inert, emplaced, uncovered, and marked mines with and without antihandling devices; inert explosives; and other items listed in the conditions statement.

*Brief Soldier:* Have the soldier destroy a mine in place, and remove another mine with a rope or wire.

#### EVALUATION GUIDE

##### Performance Measures

##### Results

#### **WARNING**

**Chemical mines should not be destroyed in place. Soviet/Warsaw Pact mines cannot be disarmed. Proceed with extreme caution.**

**NOTE:** All mines are considered to be equipped with antihandling devices until proven otherwise.

- |   |   |   |
|---|---|---|
| 1. Neutralize enemy mines with explosives.  | P | F |
| a. Ensure that all personnel are at least 300 meters from the mine.                                       |   |   |
| b. Place a 1-pound block of explosives within 6 inches of the mine and detonate.                          |   |   |
| 2. Neutralize the mine by throwing a grapnel with rope or wire attached to pull trip wires and tilt rods. | P | F |

## EVALUATION GUIDE

Performance Measures	Results	
<p>3. Remove the mine by lifting and dragging it out of the immediate area with a rope or wire.</p> <p style="padding-left: 40px;">a. Set up a tripod or A-frame with available materials, if needed, to lift the mine out of its hole.</p> <p style="padding-left: 40px;">b. Carefully uncover as much of the mine as necessary to expose the handle or other projection, and attach a rope or wire with grapnel. Use expedient hooks, if needed.</p> <p><b>NOTE:</b> Do not move the mine while attached to wire, rope, or grapnel, which might detonate the antihandling device.</p> <p style="padding-left: 40px;">c. Stretch the rope across the tripod.</p> <p style="padding-left: 40px;">d. Take cover or lay prone at least 50 meters away.</p> <p style="padding-left: 40px;">e. Pull the opposite end of the rope so the mine is lifted straight up.</p> <p style="padding-left: 40px;">f. Wait 5 minutes before approaching the mine to guard against delayed firing mechanism.</p>	P	F
<div style="border: 2px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p><b>WARNING</b></p> <p><b>If the mine must be removed by hand, call for explosive ordnance disposal personnel.</b></p> </div>		
<p>4. Neutralize friendly mines.</p> <p style="padding-left: 40px;">a. Use explosives or rope on mines that definitely have antihandling devices that the soldier did not install.</p> <p style="padding-left: 40px;">b. Use rope on mines that may have antihandling devices.</p> <p><b>NOTE:</b> Any mines that are not booby trapped, damaged, malfunctioning, or continuously observed must be removed by the use of explosives.</p>	P	F
<p>5. Complete all work without injury to personnel.</p>	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

FM 20-32

FM 5-101

## **INSTALL A MECHANICAL AMBUSH**

### **071-098-0002**

#### **CONDITIONS**

In a field location, given a bandoleer containing an M18A1 Claymore mine complete with accessories, a roll of trip wire, a plastic spoon or other nonconductor of electricity, a power source (a battery with at least 3 volts), a clothespin, small nail, knife, and the area to be converted.

#### **STANDARDS**

Position and aim the Claymore to cover the target area. Secure the trip wires so the mine does not move when it is activated. Camouflage wires and stakes to prevent detection. Properly connect the power source.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

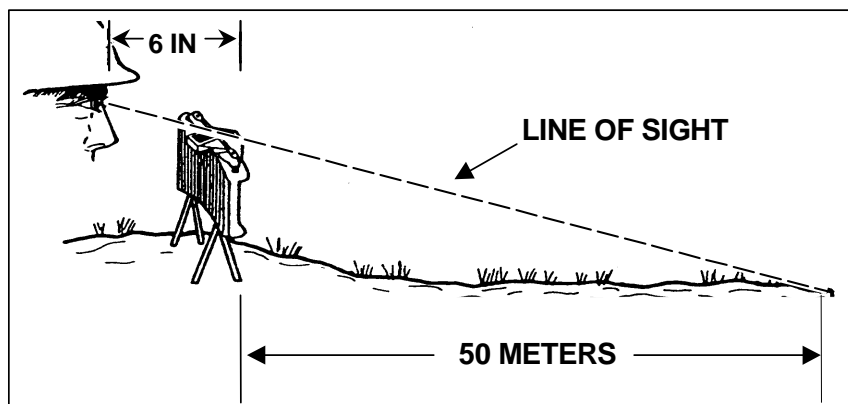
1. Laying and aiming.

a. Laying. Check to see that the mine and all accessories are in the bandoleer. Remove the electrical firing wire, leaving the mine and other accessories in the bandoleer.

(1) Secure the shorting plug end at the trip wire position. Place the bandoleer on your shoulder and unroll the firing wire to the position selected for emplacing the mine.

(2) Remove the mine from the bandoleer; position the mine with the surface marked FRONT TOWARD ENEMY and the arrows on top of the mine pointing in the direction of the enemy or pointing to the desired area of fire.

b. Aiming (knife-edge sight). Select an aiming point at ground level about 50 meters (150 feet) in front of the mine. Position the eye 15 centimeters (6 inches) to the rear of the sight. Aim the mine by aligning the two edges of the sight with the aiming point (Figure 1).



**Figure 1. Aiming of the mine.**

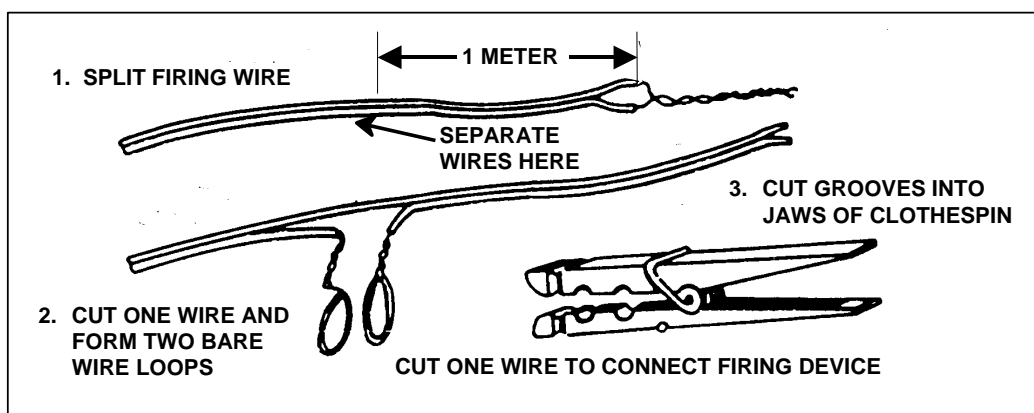
2. Preparing the firing wire. Cut the combination shorting plug and dust cover from the end of the firing wire. Remove about 1 inch of insulation from each of the cut wires. Twist the ends of the wires together to prevent static electricity from entering the firing wire and detonating the blasting cap. These wires will later be connected to the power source.

3. Installing the firing devices.

a. Prepare the clothespin ([Figure 2](#)).

b. Form a loop in each end of the cut wire ([Figure 2](#)). Fit a wire loop over each jaw of the clothespin. Ensure that the wires are seated in the clothespin grooves. Twist each wire until it is secured tightly to the clothespin. Ensure that the wires touch when the clothespin jaws are shut.

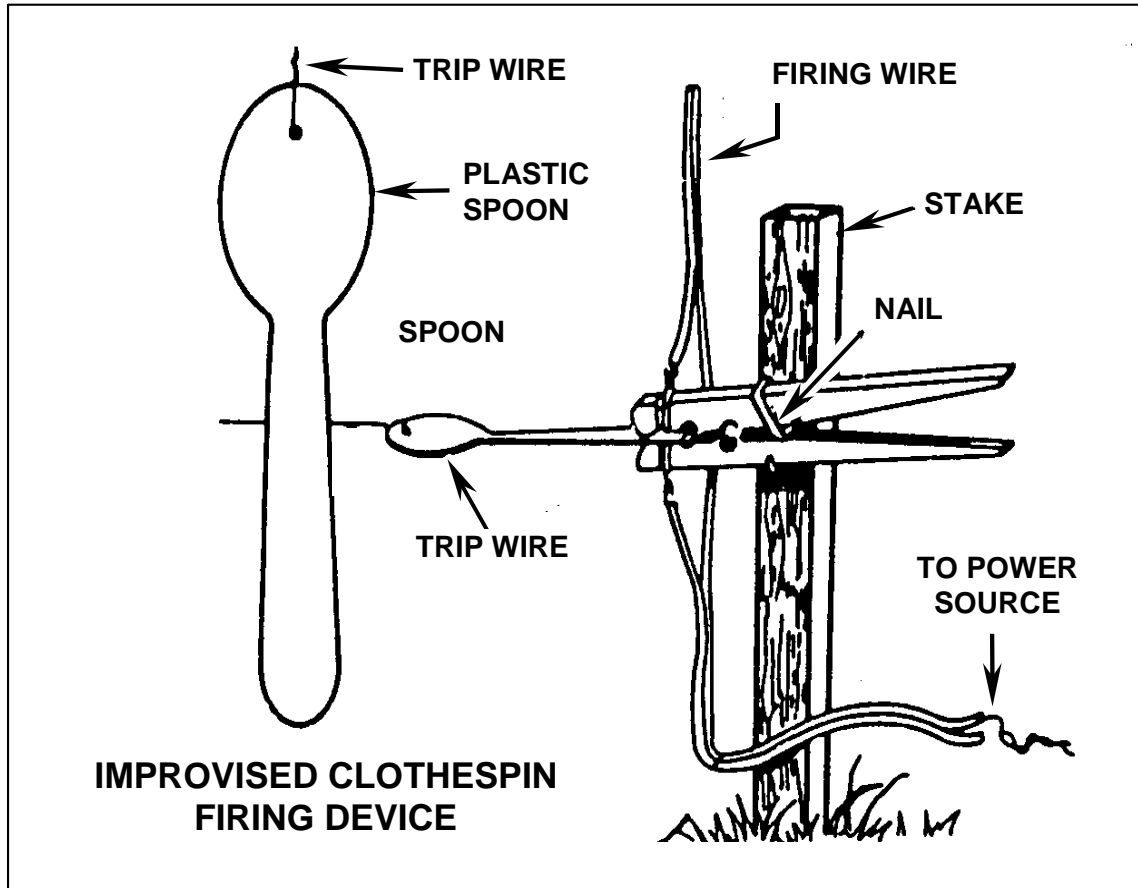
**NOTE:** The firing device (plastic spoon and clothespin) may be constructed of any nonconductive material (sticks, wood, or plastic). The material used to replace the clothespin must be under tension so it will snap together for firm contact of the wires to complete the firing circuit and detonate the mine.



**Figure 2. Preparation of the clothespin firing device.**



4. Connecting the trip wire (Figure 3). Attach one end of the trip wire to a plastic spoon (or other nonconductor). Connect the other end of the trip wire firmly to a tree or stake on the opposite side of the target area. Insert the spoon between the jaws of the clothespin. Place the trip wire about ankle-high to prevent easy detection by the enemy.



**Figure 3. Completion of the firing device.**

5. Arming and electrical firing.
- Secure the firing wire about 1 meter from the side of the mine so the mine will not be mislaid if the firing wire is disturbed. Insert the blasting cap into either detonator well and lock it in using the shipping plug priming adapter.
  - Connect the power source. Figure 4 shows an example of a mechanical ambush.

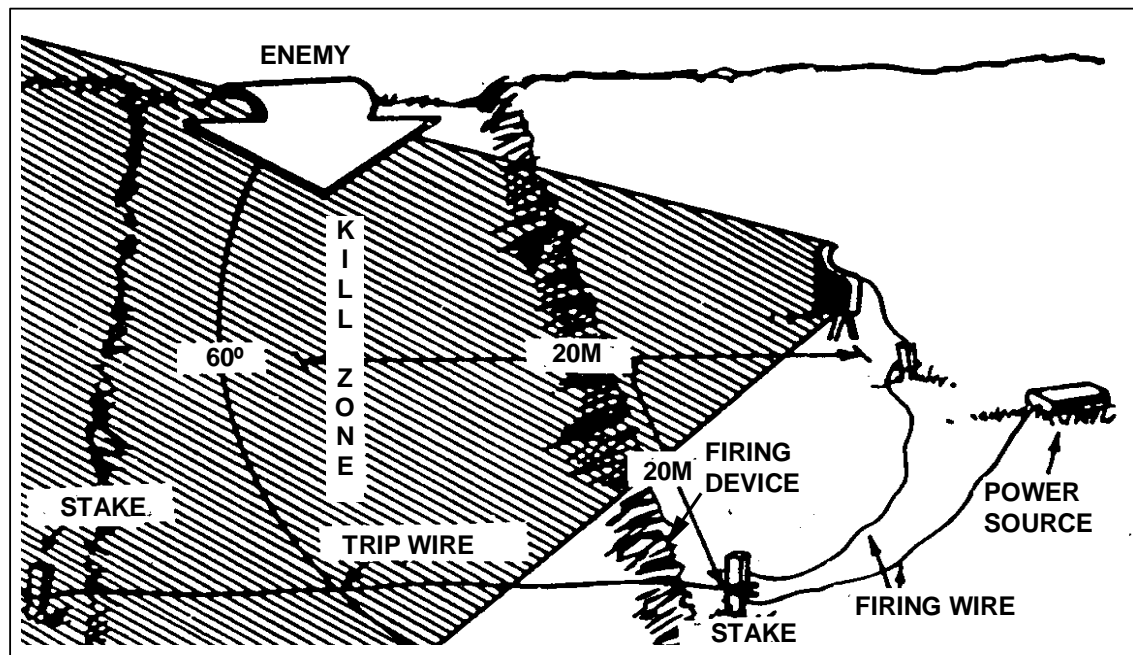


Figure 4. Example layout of the mechanical ambush.

#### CAUTION

Ensure that the handle of the spoon is securely seated between the jaws of the clothespin. Ensure that the trip wire is not too tight and the area is clear of any objects that might fall on the trip wire, causing the mine to detonate prematurely. Separate the twisted ends of the firing wire and attach the ends to the power source. The power source must produce at least 3 volts of electricity.

#### WARNING

In a training situation, *do not* try to install a live Claymore during inclement weather.

### EVALUATION PREPARATION

*Setup:* At the test site, provide all the equipment and information given in the task conditions statement. Use an INERT Claymore mine for training.

*Brief Soldier:* Tell the soldier to emplace a mechanical ambush using the equipment given. Show him where to emplace the mine and the trip wire, and show him the ambush area.

**WARNING**  
***DO NOT*** use live mines for test purposes.

### EVALUATION GUIDE

Performance Measures	Results	
1. Emplace the trip wire stakes.	P	F
2. Secure the shorting plug of the firing wire to the trip wire stake that is used for the firing device.	P	F
3. Unroll the firing wire to the position selected to emplace the mine.	P	F
4. Emplace and aim the mine to cover the ambush area.	P	F
5. Prepare the firing wire to be attached to the clothespin and the power source.	P	F
6. Prepare the clothespin as a firing device.	P	F
7. Prepare the trip wire using the plastic spoon (or other nonconductor) and attach the trip wire to the far stake.	P	F
8. Move back to the mine; secure the firing wire to the stake 1 meter from the side of the mine.	P	F
9. Arm the mine by placing the blasting cap in either detonator well with the shipping plug priming adapter.	P	F
10. Move to and complete setting up the firing device; connect the power source.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

**Required**  
None

**Related**  
FM 21-75

## **RECOVER A MECHANICAL AMBUSH**

### **071-098-0001**

#### **CONDITIONS**

Given an installed mechanical ambush (M18A1 Claymore).

#### **STANDARDS**

Disarm and recover a mechanical ambush without causing the Claymore to detonate.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

1. Recover a mechanical ambush.
  - a. Disconnect the firing wire from the power source at the power source.

#### **WARNING**

**The power source must be disconnected before any recovery of the mechanical ambush is made.**

- b. Remove the blasting cap from the Claymore. Remove the firing wire from the firing device.
  - c. Roll up the firing wire with the blasting cap and trip wire. Place them all in the bandoleer.
  - d. Recover all other items, including the power source, the stakes, and the firing device.
2. Keep separate from the others any Claymore that has been prepared and used in a mechanical ambush. Once the shorting plug has been cut from the Claymore firing wire, the mine can only be used for mechanical ambush.

#### **EVALUATION PREPARATION**

*Setup:* At the test site, provide a Claymore mine set up for a mechanical ambush as explained in Task 071-098-0002, Install a Mechanical Ambush.

*Brief Soldier:* Show the soldier the mine, the firing device, and the power source. Tell the soldier to disarm and recover the mechanical ambush.

**NOTE:** If any of the performance measures are performed before performance measure 1, the soldier will receive a NO-GO for the task.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Disconnect the power source.	P	F
2. Remove the blasting cap from the Claymore.	P	F
3. Remove the firing wire from the firing device.	P	F
4. Roll up the firing wire and blasting cap and place them in the bandoleer.	P	F
5. Retrieve the Claymore and place it in the bandoleer.	P	F
6. Recover the firing device, the power source, and the trip wires.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
None	FM 21-75

## BASIC TACTICS

### MOVE AS A MEMBER OF A FIRE TEAM 071-326-0501

#### CONDITIONS

In a designated position (other than team leader) in a moving fire team.

#### STANDARDS

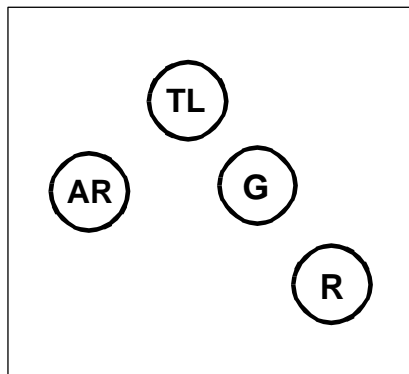
React immediately to the fire team leader's example, by performing the same actions he does in the designated position within the formation.

#### TRAINING AND EVALUATION Training Information Outline

1. Fire team formations describe the relationship of the soldiers in the fire team to each other. Standard fire team formations are the wedge ([Figure 1](#)), modified wedge ([Figure 2](#)), diamond ([Figure 3](#)), and file ([Figure 4](#)).

a. Fire team wedge ([Figure 1](#)). This is the basic fire team formation. It has the following characteristics:

- (1) Is easy to control.
- (2) Is flexible.
- (3) Allows immediate fires in all directions.
- (4) Provides all-round local security.

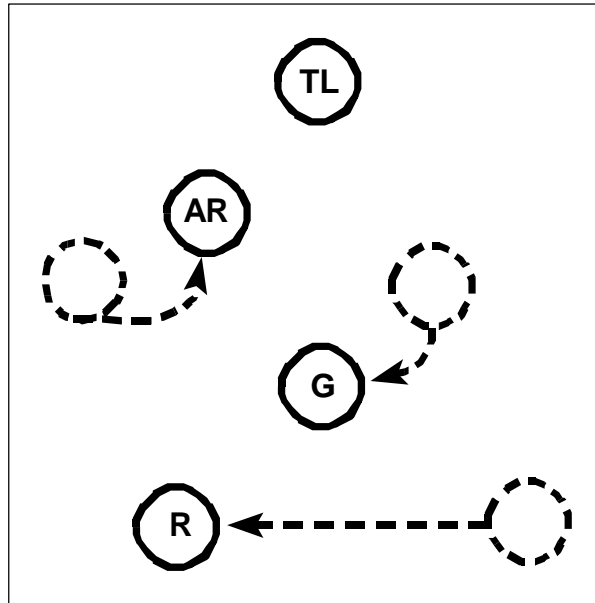


**Figure 1. Fire team wedge.**

b. Modified wedge ([Figure 2](#)). When rough terrain, poor visibility, or other factors reduce control of the wedge formation, the sides are closed up to (almost) a single file. When moving in less rugged terrain and control becomes easier, soldiers resume their

original positions. The modified wedge can also be used for extended periods when traveling on roads or trails. It has the following characteristics:

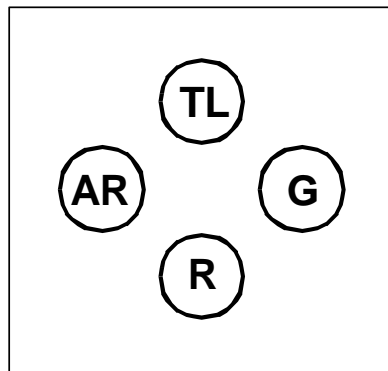
- (1) Is easier to control in reduced visibility or rough terrain.
- (2) Provides less security to flanks than a wedge but more than a file.
- (3) Masks fires initially to the front and rear for the majority of the team.



**Figure 2. Modified fire team wedge.**

c. Fire team diamond ([Figure 3](#)). This formation is a variation of the wedge. It is most often used when the fire team is operating alone or is the lead security element (point) for a column or file. It has the same characteristics as a wedge except there is—

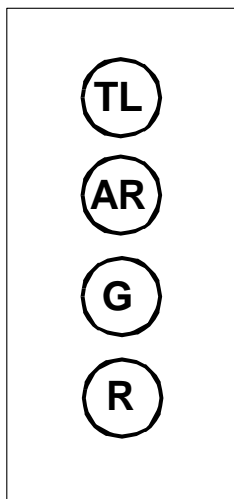
- (1) Reduced frontage.
- (2) Increased security to the rear.
- (3) Immediate fires in all directions, but one man's fires are always masked.



**Figure 3. Fire team diamond.**

d. Fire team file ([Figure 4](#)). When the fire team is not using a wedge or diamond formation, it uses the file. The characteristics of the file are—

- (1) Provides maximum control.
- (2) Provides minimum frontage. It is the easiest formation to use in close terrain or vegetation.
- (3) Facilitates speed of movement.
- (4) Is less flexible than the wedge or diamond.
- (5) Provides immediate fires to flanks, but it masks most soldier's fires to the front and rear.



**Figure 4. Fire team file.**

2. The distances between soldiers in the formation depend on the terrain, visibility, and control factors. The normal interval in daylight is about 10 meters. Formations should not be held rigid but should vary according to the factors of METT-T.
  - a. The interval is increased in open terrain.
  - b. The interval is decreased when visibility is limited by underbrush, terrain, darkness, smoke, or dense fog.
  - c. The normal interval is resumed as soon as conditions permit.

### **EVALUATION PREPARATION**

*Setup:* This task is tested only during a platoon or larger tactical exercise. The fully combat-equipped soldier moves as part of a fire team, operating as part of a platoon conducting a dismounted movement to contact. The soldier may act as any duty position except team leader.



*Brief Soldier:* Tell the soldier that he is a member of a fire team moving within the fire team formation, that he must use proper movement techniques within the formation as dictated by terrain and visibility, and that he must follow the team leader's instructions or signals.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Keep relative distance within the formation.	P	F
2. Maintain visual contact with the team leader.	P	F
3. Perform the same action as the team leader while maintaining relative position.	P	F
4. Maintain the appropriate interval within the formation based on visibility, terrain, and the team leader's instructions and signals.	P	F
5. Assume the proper position within the formation as the formation changes.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
None	FM 7-7 FM 7-7J FM 7-8

## ESTIMATE RANGE

### 071-326-0512

#### CONDITIONS

Given personnel, equipment, and vehicles, all stationary and either partially or fully exposed, at ranges from 50 to 3,000 meters, during daylight or night, with good visibility.

#### STANDARDS

State the range to each target with no more than a 20-percent error (plus or minus).

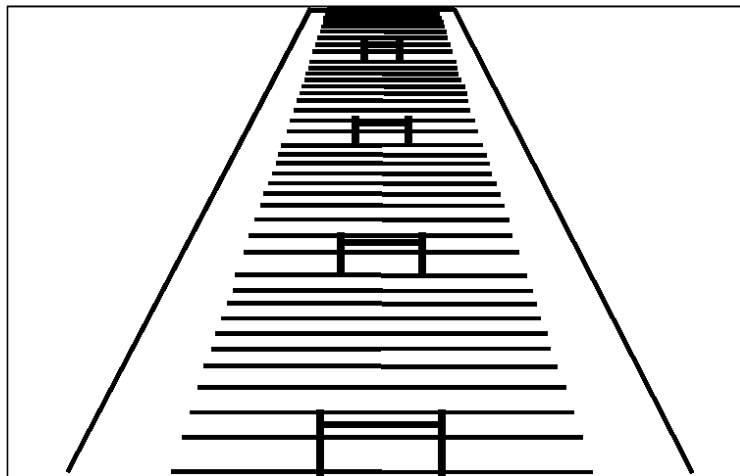
#### TRAINING AND EVALUATION

##### Training Information Outline

**NOTE:** Estimating range is one of the most difficult skills to learn, but is an indispensable one to have when it is needed.

1. Football-field method. Even though the length of a football field is 100 yards instead of 100 meters, it is a familiar unit of measure that soldiers can use in estimating ranges.

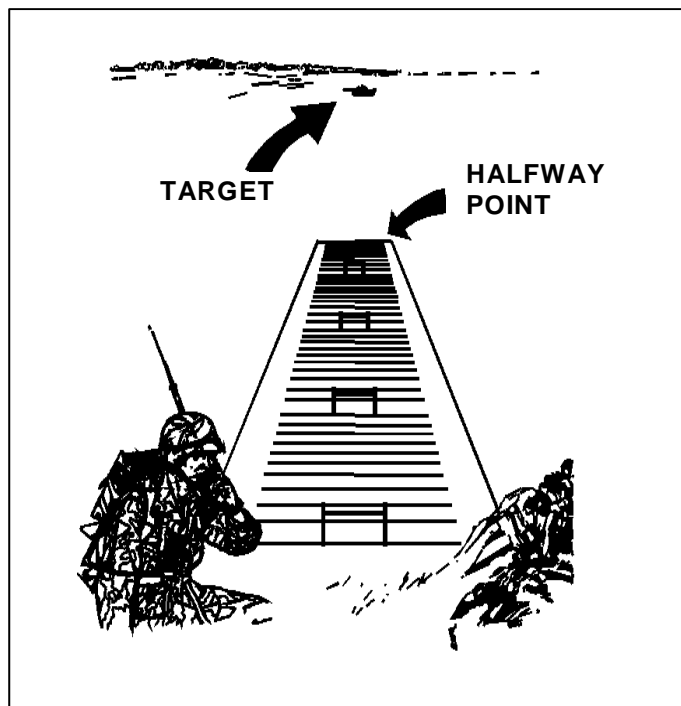
a. Learn what 100-meter intervals (football-fields) look like on the ground ([Figure 1](#)).



**Figure 1. Football field method.**

b. For ranges up to 500 meters, estimate the number of football fields between you and the target.

c. For ranges between 500 and 1,000 meters, pick a point halfway between you and the target. Determine the distance to the halfway point as previously described. Double the estimate to find the range to the target ([Figure 2](#)).



**Figure 2. Halfway-point method.**

d. Learn the effects of terrain and weather conditions on target appearance (Figure 3).

CONDITIONS IN WHICH TARGETS SEEM CLOSER	CONDITIONS IN WHICH TARGETS SEEM FARTHER AWAY
Bright, clear, daylight conditions	Foggy, rainy, hazy, or twilight conditions
Targets with sun in front of them	Targets with sun behind them
Targets at higher elevations	Targets at lower elevations
Large targets	Small targets
Brightly colored targets (white, red, yellow)	Darkly colored targets
Targets that have contrast	Camouflaged targets
Targets viewed across a ravine, hollow, river, or depression	
Targets at sea	

**Figure 3. Effects of terrain and weather on target appearance.**

## 2. Recognition/appearance-of-objects method.

a. Although the target conditions in [Figure 4](#) will have some effect on range estimation, the data in [Figure 4](#) generally hold true.

b. If possible, study the appearance of people and objects at various distances until you know how far away they are by how big or clear they seem to be.

TARGET	DISTANCE TARGET CAN BE RECOGNIZED WITH THE NAKED EYE (in meters)	DISTANCE TARGET CAN BE RECOGNIZED WITH BINOCULARS (in meters)
A tank crew member, soldier, machine gun, mortar, antitank gun, antitank missile launcher	500	2,000
Tank, armored personnel carrier, truck (by model)	1,000	4,000
Tank, howitzer, armored personnel carrier, truck	1,500	5,000
Armored or wheeled vehicle	2,000	6,000

**Figure 4. Target recognition method.**

**EXAMPLE:** You should be able to identify armored and wheeled vehicles from 1,500 to 2,000 meters with the naked eye. If you can identify the vehicle as a tank, but you cannot determine the model, the range is between 1,000 and 1,500 meters. Binoculars greatly increase the range at which you can identify your target.

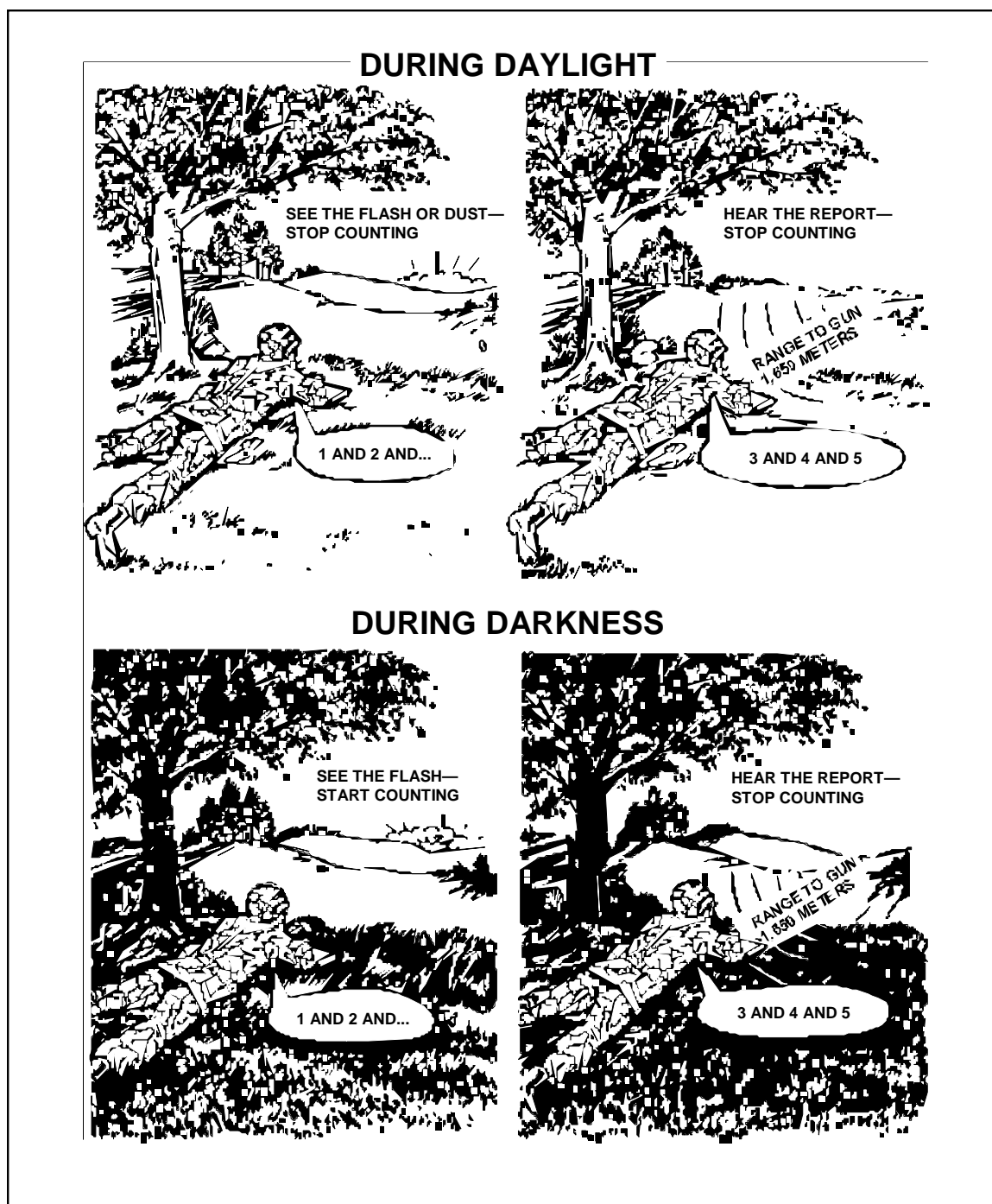
## 3. Flash-to-bang method.

a. Using this method, determine range by measuring the time between the flash and the gun report ([Figure 5](#)). Sound travels at the speed of 330 meters per second. Light travels much faster.

b. Observe the flash of the target or weapon firing.

c. Count the number of seconds until you hear the weapon fire. You may measure this time interval on a stopwatch, or you may estimate it by counting steadily. For example, a 3-second count would be “one-thousand-one, one-thousand-two, one-thousand-three” or “1 and 2 and 3.” If you must count higher than 10, start over at 1.

d. Multiply the number of seconds by 330 meters (the speed of sound) to estimate the range from your position to the target.



**Figure 5. Flash-to-bang method.**

4. Binocular-reticle/mil-relation methods.

a. Binocular-reticle method. Fire control equipment requires precise calculations and adjustments, so it is marked in mils. You can use the reticle in a pair of binoculars to determine the width, length, or height of a target in mils (Figure 6).

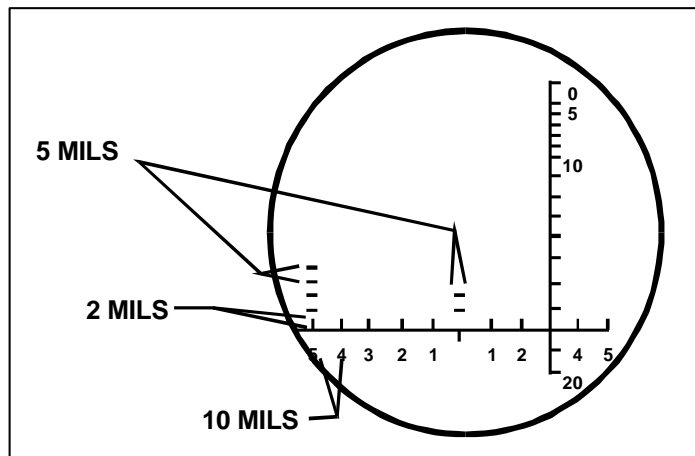


Figure 6. Binocular reticle.

b. Mil-relation method. Use the width, length, or height of the target in mils, represented by the  $R$  in the mil-relation formula,  $R = W - m$ , to determine the range to the target (Figure 7). The mil relation holds true whether the  $W$  is measured horizontally (Figure 8) or vertically (Figure 8).

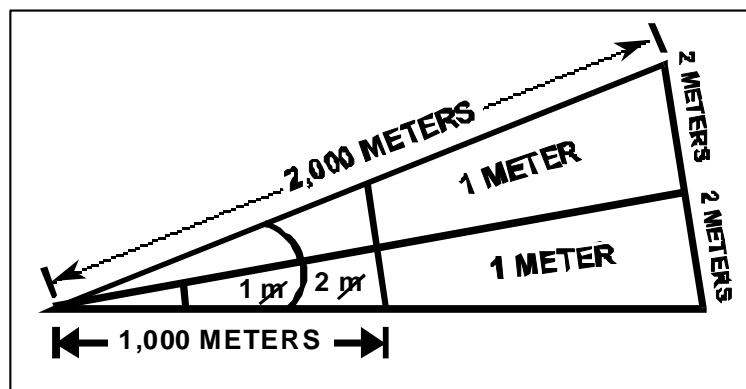


Figure 7. Mil-relation method.

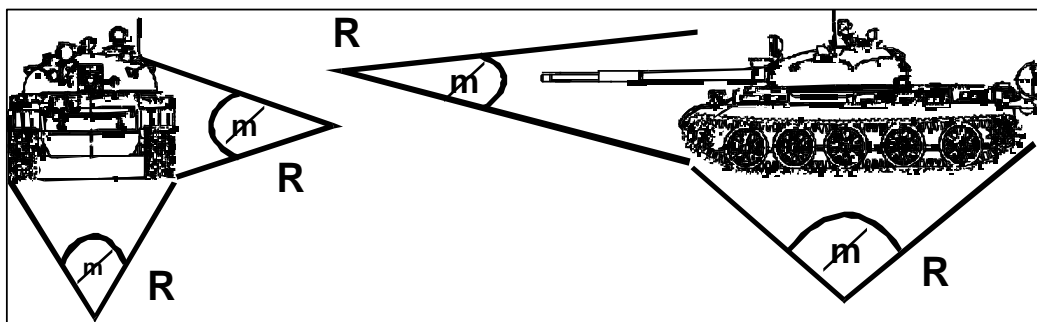


Figure 8. Use of the mil-relation formula.

(1) If you know any two of these three measurements, you can use this formula to compute the remaining measurement.

(2) The mil is a unit of angular measurement equal to 1/ 6,400 of a circle. One degree consists of about 18 mils. The symbol for a mil is the letter “m” with a solidus through it. Because the relationship represented by this formula is constant, other units of measure, such as yards, feet, or inches, can be substituted for meters in expressing width or range.

(3) Both W (width, length, or height) and R (range) must be expressed in the same unit of measure. For example, if you extend the lines that define a 1-mil angle out 1,000 yards, the distance between the end of one line and the other will be 1 yard. At 1,000 meters, a 1-mil angle is 1 meter across ([Figure 9](#)).

TARGET			ANGLE MEASUREMENT IN MILS									
			1	2	3	4	5	6	7	8	9	10
TYPE	LENGTH	WIDTH	RANGE (IN METERS)									
MEDIUM TANK	6.5 METERS	3.5 METERS	6,500	3,300	2,200	1,600	1,300	1,100	900	800	700	700
			3,500	1,800	1,200	900	700	600	500	400	400	400
HEAVY TANK	7.5 METERS	3.5 METERS	7,500	3,800	2,500	1,900	1,500	1,300	1,100	900	800	800
			3,500	1,800	1,200	900	700	600	500	400	400	400

**Figure 9. Mil angle measurement and range.**

(4) You can use the word “WORM” as a memory aid ([Figure 10](#)).

WIDTH	(in yards or meters)	
OVER		W
RANGE	(in yards or meters)	R x M
times MILS		

**Figure 10. WORM memory aid.**

## EVALUATION PREPARATION

*Setup:* Position personnel, equipment, and vehicles (or silhouettes) to serve as five targets at ranges from 50 to 3,000 meters. Ensure each target is fully exposed. Have binoculars available for the soldier to use in estimating the range using the binocular reticle and mil-relation methods.

*Brief Soldier:* Tell the soldier that he must state the distance to at least three of the five targets, with no more than 20 percent error in the distance he states to each.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Using football field method.	P	F
2. Using recognition/appearance-of-objects method.	P	F
3. Using flash-to-bang method.	P	F
4. Using binocular-reticle/mil-relation method.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
None	FM 17-12 FM 21-75



## PERFORM SELF-EXTRACTION FROM A MINEFIELD

### 071-410-0001

#### CONDITIONS

In full combat equipment, given a probe, mine-marking material, and one of two situations. *Situation 1:* Given a start point and a direction to probe in a suspected or known minefield, you are to breach or clear the minefield. *Situation 2:* You are in a minefield.

#### STANDARDS

*Situation 1:* Perform all actions to prepare for probing; locate, identify, and mark all mines within a 1-meter-wide strip through the minefield. *Situation 2:* Perform all actions to prepare for probing; locate, identify, and mark all mines in the immediate area; locate, identify, and mark all mines in a 1-meter-wide strip to the edge of the minefield.

#### TRAINING AND EVALUATION

##### Training Information Outline

- NOTES:**
1. Probing is a way of detecting mines by piercing the earth with a sharp object such as a bayonet or sharp piece of wood. Probing is the best way to find buried mines. It is slow, careful work, especially in hard or frozen ground.
  2. Using bayonets for probing has been approved. If intelligence or experience indicate that magnetic mines are being used, the bayonet is not used for probing.

1. Prepare to breach or clear a minefield.

- NOTES:**
1. A soldier may become involved with a minefield in either of two situations: as part of a team that is breaching or clearing a minefield or by accidentally entering a minefield. If he accidentally enters a minefield, he must perform self-extraction to get out of it. That is, he must probe his way out of the minefield.
  2. When a minefield is emplaced, it is normally covered by direct or indirect fires. Before trying to clear or breach a minefield, these fires must be neutralized.
  3. Clearing or breaching a minefield is normally a well-planned team operation. For a detailed explanation of the makeup, duties, and procedures of the breaching or clearing party, see FM 20-32.

- a. Prepare to breach or clear a minefield during daylight. Before probing—

(1) Remove items, such as packs, rucksacks, helmets, and web gear, and leave them in a designated area.

(2) Remove jewelry and place it in pockets, or leave it with the web gear.

(3) Keep the individual weapon, protective mask, and flak jacket. Sling the rifle across the back and wear the mask in the leg-carry position.

(4) Keep dog tags around the neck and tucked inside the shirt.

(5) Remove the field jacket and roll the sleeves above the elbows so that trip wires may be felt more easily. If the weather conditions demand that field jackets or heavy outer garments be worn, use extra caution in feeling for trip wires.

b. Get into position to probe. Approach the start point, which has been determined by the OIC or NCOIC.

(1) If the area to be probed is open terrain and is free of brush or trees, stand facing the strip to be cleared and visually inspect the area immediately to the front for trip wires.

(2) Slowly ease into a full squat. Feel from the height of any grass or short vegetation to the ground to ensure no trip wires have been hidden in the grass.

(3) Stay behind the probe starting point. Move from the full squat into a kneeling position. To go into a kneeling position, slide one foot to the rear and place the knee where the foot was. To kneel on both knees, repeat this procedure with the other foot. Probing can be done on one or both knees, whichever is more comfortable.

**NOTE:** When required by the tactical situation, probing can be done from the prone position. From the kneeling position, slide each foot to the rear to obtain the full prone position.

(4) If the area to be probed is covered by brush or trees, stand facing the strip to be cleared and visually inspect the area immediately to the front for trip wires.

(5) Raise arms up along the sides until fully extended over the head, palms to the front. Bring the arms slowly down to the front, feeling for trip wires, until the arms are straight to the front. Keep the arms extended to the front and slowly ease into a full squat, again feeling for trip wires with the hands and arms. Once in a full squat, continue to feel for trip wires with the hands and arms down to ground level.

(6) From the full squat, go into the kneeling position as explained above.

**CAUTION**

While working in an area with brush or trees, continually observe overhead for trip wires while moving forward.

(7) Probing may begin from this position.

c. Prepare to clear mines during limited visibility. The same procedures are used for preparation and for entering the kneeling or prone position in darkness, fog, or smoke as are used in daylight in a brush or tree-covered area.

d. Perform self-extraction from minefields.

**NOTE:** Normally, the first indication that you are in a minefield is when someone sets off a mine. Upon hearing or seeing an explosion, the natural reaction is to “hit the dirt,” then determine if it was incoming indirect fire, a booby trap, or a mine. Each individual must determine whether “hitting the dirt” or “freezing in place” is safer.

(1) When a mine has been detected without being set off and the alert of, “Mines,” is given, “freeze in place.”

(2) After determining that you are in a minefield and the minefield is not covered by fire, proceed as follows:

(a) Whether in the prone position or still standing, examine the ground, bushes, and trees present. Look between, around, or under the feet or knees, or around and under the body.

(b) Using the bayonet, probe to clear an area large enough to move in.

(c) Remove all equipment and bundle it together.

(d) Normally, clear out of the minefield along the same path used to enter it.

(e) If forward movement is required, clear a lane. If others are close, clear a path to a central point. From there, clear a single lane to be used by the group. Coming together increases morale and allows rotation of the probers. Ensure that a safe distance is maintained between the one probing and the rest of the group.

(f) Do not leave equipment. Once it is bundled together, drag it along while probing out of the minefield.

(3) If the minefield is covered by fire, perform all probing from the prone position.

(a) All personnel stay separated.

(b) Removing or keeping equipment on is a decision that has to be made based on the situation.

(c) Each individual is on his own to self-extract himself in the fastest and safest manner possible, either out of the minefield or to the nearest covered position from which to return fire.

## 2. Probe for mines.

a. After looking and feeling, hold the probe in the hand (palm up) and probe every 2 inches across a 1-meter front. Push the probe gently into the ground at an angle less than 45 degrees from the horizontal, putting just enough pressure on the probe to sink it slowly into the ground ([Figure 1](#)).



**Figure 1. Probing.**

**WARNING**

**If pushed straight down, the tip of the probe may detonate a pressure mine.**

- b. If the probe does not go into the ground freely, pick or chip away the soil using the tip of the probe, and remove the loose dirt by hand.
- c. When a solid object is touched, stop probing and remove enough dirt to identify the object.
- d. If a mine is found, remove enough dirt to show the type of mine, then mark and report its exact location to the next in command.

**NOTE:** After probing across the 1-meter front, move the probe forward 2 inches and probe across the 1-meter front again. Continue this procedure until the minefield has been breached.

3. Mark mines. During breaching or self-extraction, clearly mark detected mines so that friendly troops can safely bypass them. Do this by placing a stick with cloth attached near the mine, a tripod of sticks over the mine, or a ring of rocks around the mine; or by at least uncovering enough of the mine so that it can be seen easily. Use any method of marking as long as it is known by all soldiers.

## EVALUATION PREPARATION

### Situation 1, Breaching or Clearing.

*Setup:* Breach or clear—

- Open or grass-covered terrain. Prepare a lane 1-meter wide. Include at least two mines within the lane. Mines may be antitank and antipersonnel or antipersonnel only. The first mine should not be more than 6 to 9 inches from the start point. In grass-covered terrain, hide one trip wire in the grass. The length of the lane depends on the time available for testing.
- Brush or tree-covered terrain. Prepare a lane 1-meter wide. Include at least two antipersonnel mines within the lane. The first mine should not be more than 6 to 9 inches from the start point. Include one trip wire at ankle level near the start point and one trip wire at waist level 5 to 6 feet from the start point. The length of the lane depends on the time available for testing.

*Brief Soldier:* Breaching or clearing. Tell the soldier the start point and the direction to probe. Tell him to identify by type every mine he finds and mark them.

### Situation 2, Self Extraction.

*Setup:* Prepare an area 2 meters square. Include a minimum of nine dummy mines within the square. Mark a point in the center. Ensure at least one mine is 18 inches from the marked center point. Wear full combat equipment.

**NOTE:** Tin cans can be used to simulate mines if dummy mines are not available. When using tin cans, the soldier is not required to identify mines as to type.

*Brief Soldier:* Tell the soldier he will administratively move to the marked center point in the square. Tell the soldier to wear all combat equipment to start the self-extraction. Tell the soldier he will be given the alert, “Mines,” and he will perform a self-extraction to the edge of the square. Tell the soldier the direction of the enemy side of the minefield.

**EVALUATION GUIDE****Performance Measures****Results**

- |   |   |   |
|---|---|---|
| 1. Breach or clear minefields.  | P | F |
| a. Prepare for probing.   |   |   |
| (1) Remove equipment.   |   |   |
| (2) Remove jewelry.   |   |   |
| (3) Roll sleeves above elbows (weather permitting).                   |   |   |
| (4) Sling the rifle across the back.                                  |   |   |
| (5) Retain the protective mask in the leg-carrying position.          |   |   |
| b. Probing position.  |   |   |
| (1) Assume the position for open terrain.                             |   |   |
| (2) Assume the position for terrain with brush or trees.              |   |   |
| (3) Assume the position for limited visibility.                       |   |   |
| c. Probing.   |   |   |
| (1) Hold the probe.   |   |   |
| (2) Probe.  |   |   |
| (3) Mark the mine(s).   |   |   |
| (4) Identify the type of mine(s).                                     |   |   |
| 2. Self-extraction.   | P | F |
| a. Probe an area large enough to move in (about 1 meter in diameter). |   |   |
| b. Remove equipment.  |   |   |
| c. Prepare equipment.   |   |   |
| d. Hold the probe.  |   |   |
| e. Probe.   |   |   |
| f. Mark the mine(s).  |   |   |

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

None

**Related**

FM 20-32

## MOUT

### SELECT HASTY FIRING POSITIONS DURING MOUT 071-326-0557

#### CONDITIONS

As a member of an attacking or defending unit in urban terrain.

#### STANDARDS

Select positions from which to place fire on the enemy while using available cover.

#### TRAINING AND EVALUATION Training Information Outline

**NOTE:** The success of the mission depends on the ability to place accurate fire on the enemy with the least possible exposure to return fire. Therefore, constantly seek covered firing positions and use them properly.

1. Fire around a building or wall.
  - a. Use the left-handed firing technique to fire around the left corner of a building or wall (Figure 1).



**Figure 1. Firing around the left corner of a building.**

- b. Use the right-handed firing technique to fire around the right corner of a building or wall (Figure 2).



**Figure 2. Firing around the right corner of a building.**

- c. Use the prone firing technique when possible.
- d. Fire around a wall when possible, not over it ([Figure 3](#)).



**Figure 3. Firing around a wall.**

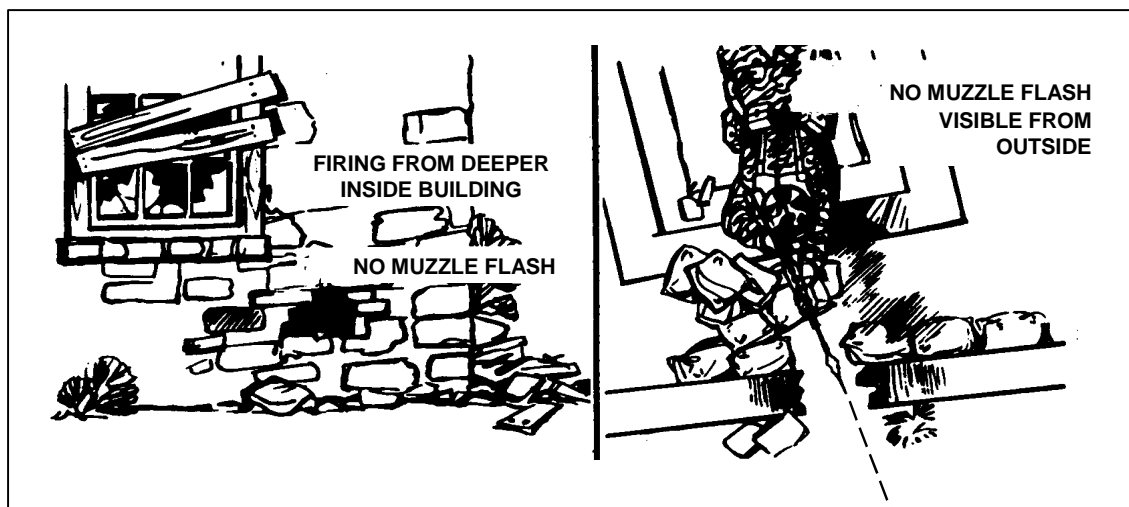
- 2. Fire from a window.
  - a. Select firing positions that are well back from the window. They help conceal the body and the rifle's muzzle.
  - b. Select a kneeling firing position to minimize exposure and prevent silhouetting ([Figure 4](#)).





**Figure 4. Firing from a window.**

3. Fire from unprepared loopholes. Select firing positions that are well back from the loophole to conceal the muzzle flash (Figure 5).



**Figure 5. Firing from loophole.**

## EVALUATION PREPARATION

*Setup:* At the test site, provide all the materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier to select positions from which he can place fire on the enemy while using available cover.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Fires around a building or wall. a. Uses the left corner. b. Uses the right corner. c. Uses the prone firing technique, when possible. d. Fires around (not over) a wall, when possible.	P	F
2. Fires from a window. a. Selects a position well back from the window. b. Uses a kneeling firing position.	P	F
3. Fires from unprepared loopholes. Selects a position well back from the window.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
FM 90-10-1	None

## **PREPARE POSITIONS FOR INDIVIDUAL AND CREW-SERVED WEAPONS DURING MOUT 071-326-0550**

### **CONDITIONS**

As a firer or crew member of a crew-served weapon, given a firing position within a building, a sector of fire, and material to reinforce the position.

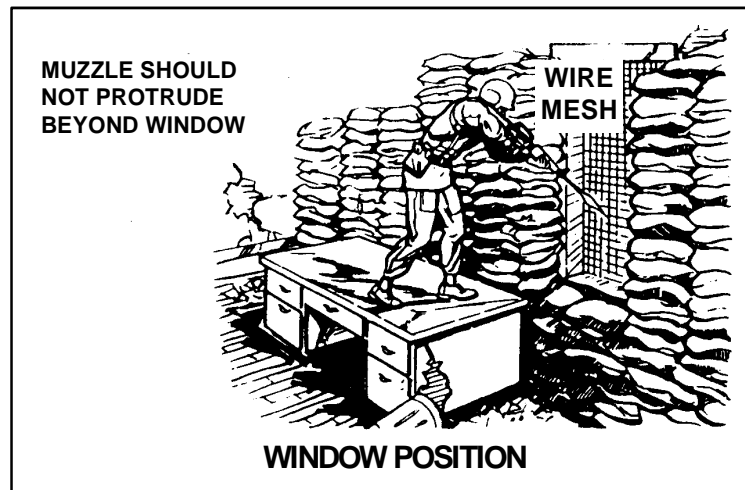
### **STANDARDS**

Prepare the position to allow accurate fire to be placed on the enemy within the given sector of fire, with the least possible exposure and maximum protection from return fire.

### **TRAINING AND EVALUATION** **Training Information Outline**

**NOTE:** When a unit is defending in urban terrain, its success depends on the ability of soldiers within the unit to place accurate fire upon the enemy with the least possible exposure to return fire. Therefore, soldiers must constantly seek and improve firing positions and use them properly.

1. Prepare individual rifle positions.
  - a. Barricade windows. Improve window firing positions by barricading around the window ([Figure 1](#)). Completely cover the window leaving only a small hole for the firer's use. When barricading windows—
    - (1) DO NOT barricade only the windows that will be used as firing positions (the enemy will soon determine which ones they are).
    - (2) DO NOT form neat, square, or rectangular holes; the enemy will easily spot them.
    - (3) Prepare barricades with sandbags, materials available in the room, materials torn from the interior walls of the building, or other available materials ([Figure 2](#)).



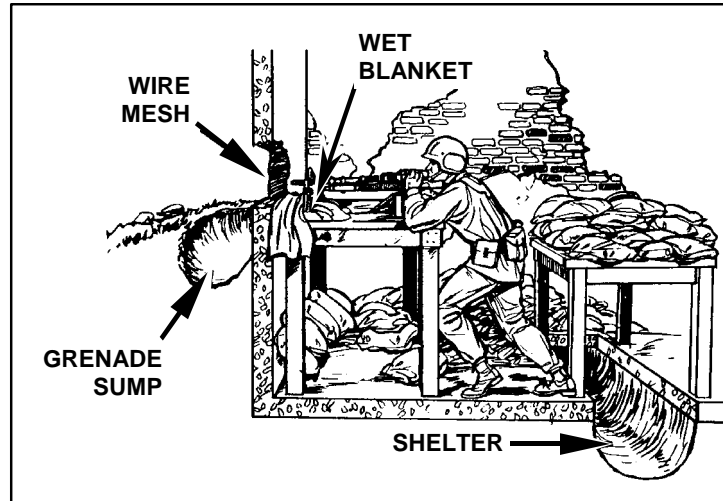
**Figure 1. Barricaded window.**



**Figure 2. Barricaded firing position.**

**NOTE:** Do not remove so much material from interior walls that the building is weakened.

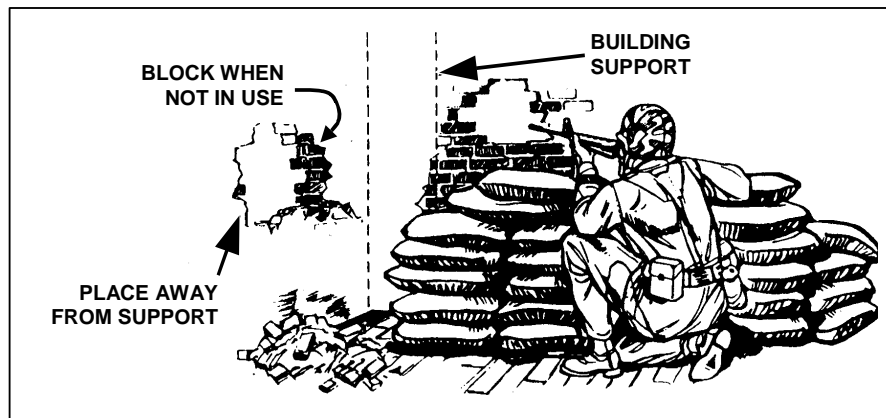
- (4) Remove all glass from the window to prevent injury from flying glass.
- (5) Leave curtains in place—they let the firer see out and prevent the enemy from seeing in.
- (6) Place a wet blanket over dusty surfaces in front of the weapon's muzzle or wet down those surfaces to prevent dust from the muzzle blast from revealing the position ([Figure 3](#)).



**Figure 3. Prepared automatic weapon position.**

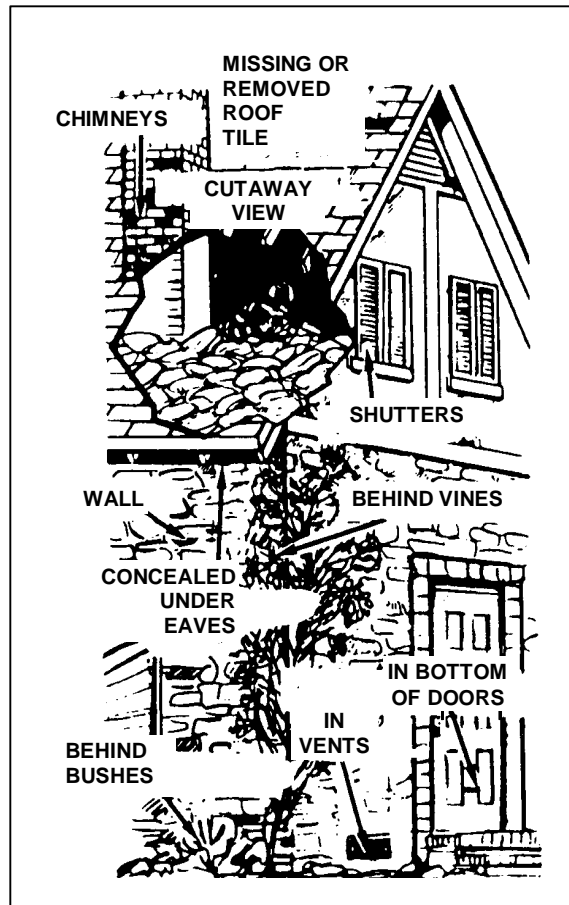
b. Prepare loopholes. Windows usually are good firing positions, but they may not allow the firer to cover his full sector. Prepared loopholes allow alternate firing positions.

(1) Break or blow several small holes in the wall (Figure 4) to allow the firer to observe and engage targets in his sector. Making several holes allows the firer to move from one to another to deceive the enemy about his location.



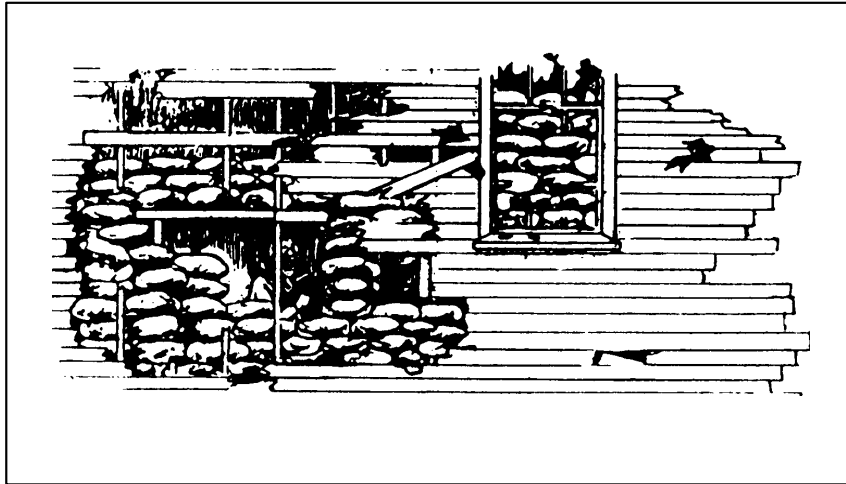
**Figure 4. Loophole position.**

(2) Camouflage the loopholes by knocking other holes in the wall to make it difficult for the enemy to know which hole the fire is coming from (Figure 5).



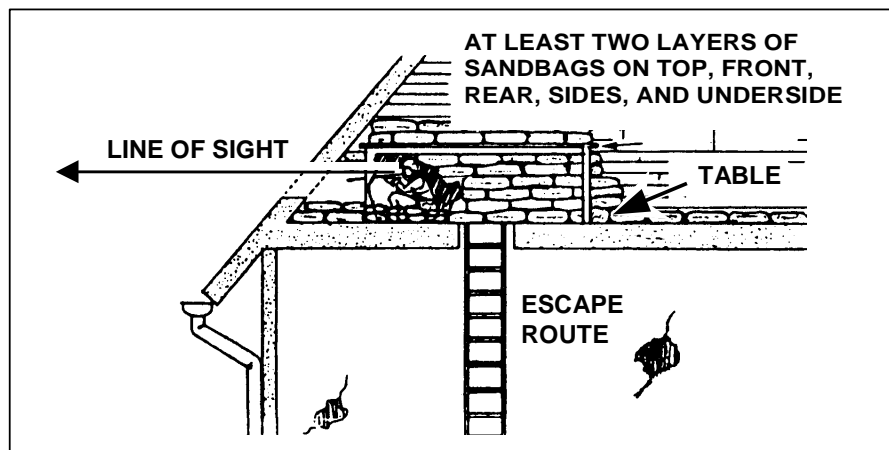
**Figure 5. Camouflage of loopholes.**

- (3) Use sandbags or other material to reinforce the walls around loopholes ([Figure 6](#)).



**Figure 6. Reinforced loopholes.**

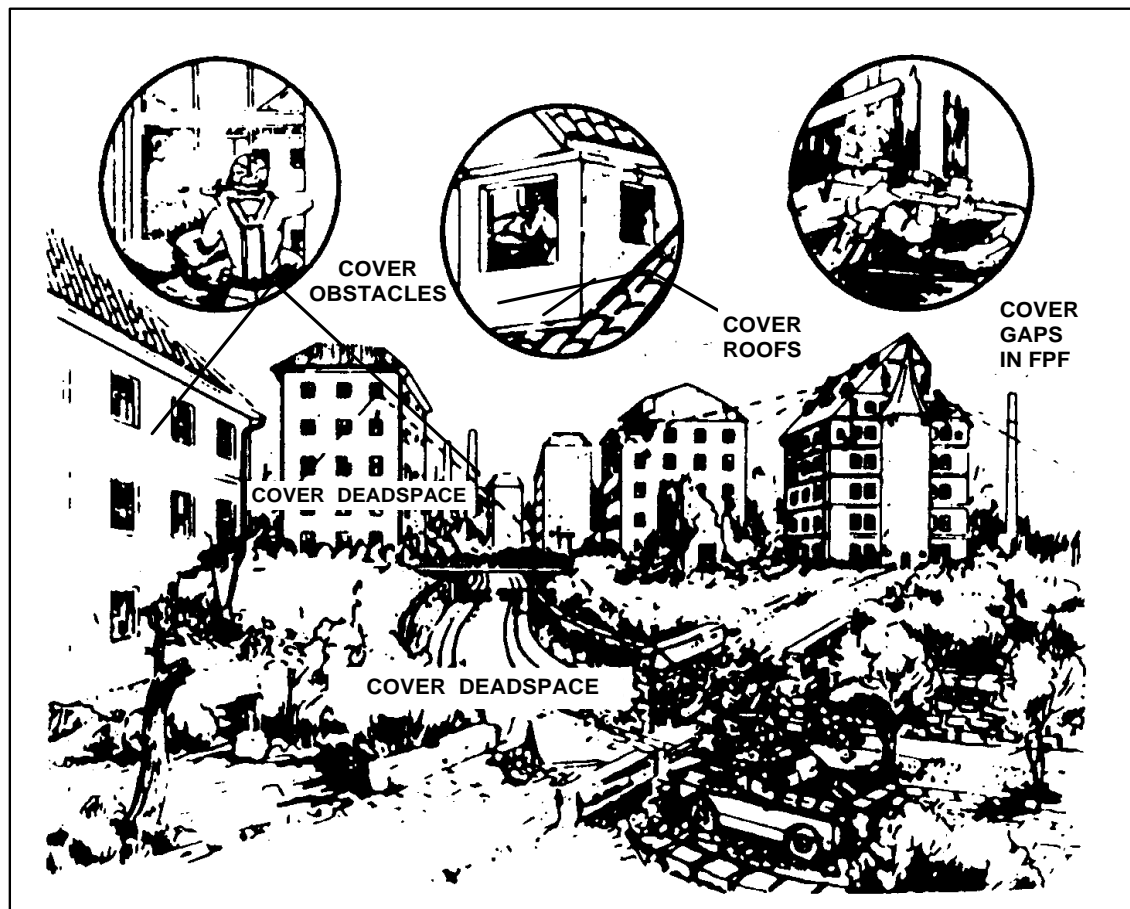
(4) When reinforcing windows or loopholes, the firer places two layers of sandbags on the floor under him. This protects him from an explosion on a lower floor when the position is on the second floor or higher. He can use tables, bedsteads, or other available material to provide overhead cover from falling debris or from explosions above the position. A blast wall can be built to the rear of the position to protect the firer from explosions in the room ([Figure 7](#)).



**Figure 7. Reinforced position.**

c. Preparer sniper positions.

(1) Sniper positions should be on or near the top of the building being defended to allow greater fields of fire ([Figure 8](#)).



**Figure 8. Sniper positions.**

(2) A chimney or other structure protruding through the roof of a building provides a base from which a sniper position can be prepared. Part of the roofing material is removed to allow the sniper to fire around the chimney while standing below roof level on a constructed platform with only his head and shoulders above the roof.

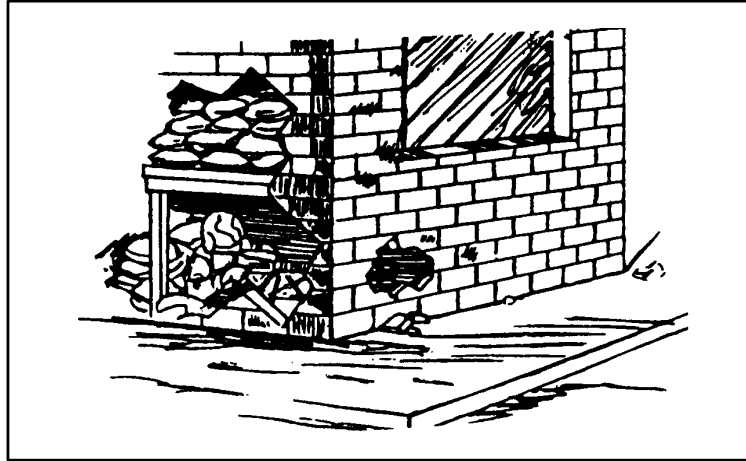
(3) Sandbags may be used on the sides of the position to protect the sniper's flanks.

2. Prepare machine gun positions.

a. The machine gun can be emplaced in the same type of position as the individual individual firer, except that windows or doors should be avoided. Windows and doors are where the enemy expects machine guns to be emplaced, therefore they draw the most fire. Because machine guns are not as mobile as rifles, they cannot move as quickly to avoid heavy fires.

b. Emplace machine guns as low as possible, using loopholes behind shrubbery or under doorjambs. Basement windows can also be used. By placing the machine gun at a lower level, grazing fire is obtained (Figure 9).





**Figure 9. Low machine gun position.**

c. Although grazing fire is desirable when employing the machine gun, it is impractical or impossible where destroyed vehicles, rubble, and other obstructions restrict the field of grazing fire. In such cases, emplace the machine gun at a higher location and fire from loopholes on the second or third floor, or fire through a loophole in the roof (Figure 10).



**Figure 10. High machine gun position.**

3. Prepare antitank weapons position. Training safety instructions from the field manuals for each weapon must be strictly followed.

a. Position antitank weapons (TOW, Dragon, 90-mm, LAW, AT4) on upper stories for long-range coverage (Figure 11).



**Figure 11. Antitank weapons placement.**

**NOTE:** The maximum depression and elevation limits of the TOW mount plus the minimum firing distance (65 meters) may result in dead space and preclude the engagement of close-in targets.

b. Backblast must be considered in choosing and preparing an antitank weapon location. None of the antitank weapons can be fired from an unvented or enclosed room (Figure 12, Figure 13, and Figure 14). When the temperature drops below freezing, all backblast areas double in size. Leaders must ensure the backblast misses other positions. For more exact backblast information, refer to the chapter or appendix entitled “Safety” in the weapon’s respective field manuals.



**Figure 12. TOW position.**



**Figure 13. Dragon position.**



**Figure 14. LAW position.**

c. Avoid firing from inside a building. When firing from inside a building cannot be avoided, the following conditions must be met before firing:

- (1) The building must be sturdy.
- (2) The ceiling must be at least 8 feet high.
- (3) The floor size of the room must be at least 17 by 24 feet for a TOW or AT4, 12 by 15 feet for a Dragon, and 4 feet to the back wall for a LAW backblast area.

(4) In addition, an opening at least 20 feet square must be at the rear of the weapon for backblast. An open 7- by 3-foot door is adequate, but it must be located directly behind the firer.

(5) All glass must be removed from windows beside and behind the weapon; windows and doors on the firing wall must be reinforced only, to avoid drawing attention to them. Reinforcing the windows also helps protect soldiers from direct fire. All loose objects must be removed from the room.

(6) All soldiers within the room must be forward of the rear of the weapon and must avoid standing in corners or near walls. If possible, they should construct reinforced positions that can protect them in case the building collapses.

(7) All soldiers in the room must protect their ears when the weapon is fired.

(8) The clearance between the muzzle of the weapon and the opening it is fired from should be 9 inches for a TOW, 6 inches for a Dragon and for an M136 AT4.

d. When emplacing the TOW and Dragon, the 65-meter minimum firing distance (arming distance) must be considered.

e. Antitank weapon positions should be reinforced the same as the individual rifle position, except that no blast wall is erected.

## EVALUATION PREPARATION

*Setup:* At the test site, provide all the materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier to prepare an individual or crew-served weapon position.

## EVALUATION GUIDE

### Performance Measures

### Results

- |   |   |   |
|---|---|---|
| 1. Prepares individual rifle positions.                     | P | F |
| a. Barricades the windows.                                  |   |   |
| b. Prepares and camouflages the loopholes.                  |   |   |
| c. Prepares sniper positions.                               |   |   |
| 2. Prepares the machine gun positions.                      | P | F |
| a. Avoids doors and windows.                                |   |   |
| b. Emplaces as low as possible for grazing fire.            |   |   |
| c. If field of grazing fire is obstructed, emplaces higher. |   |   |

**EVALUATION GUIDE****Performance Measures****Results**

- |  |   |   |
|--|---|---|
| 3. Prepares the antitank weapon positions.                                   | P | F |
| a. Positions the weapons on the upper stories.                               |   |   |
| b. Identifies the backblast area.  |   |   |
| c. Ensures that the building is structurally sound and can withstand firing. |   |   |
| d. Identifies minimum firing distance for the TOW and Dragon.                |   |   |
| e. Reinforces the position.  |   |   |

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

FM 90-10  
FM 90-10-1

**Related**

None

## **PERFORM MOVEMENT TECHNIQUES DURING MOUT**

### **071-326-0541**

#### **CONDITIONS**

As a member of an assault element in urban terrain with the enemy location and strength uncertain, given an individual weapon with ammunition and load-bearing equipment.

#### **STANDARDS**

Perform a visual reconnaissance to determine the next position; then, using proper movement techniques, move rapidly to the next covered or concealed position with minimum exposure to enemy fire.

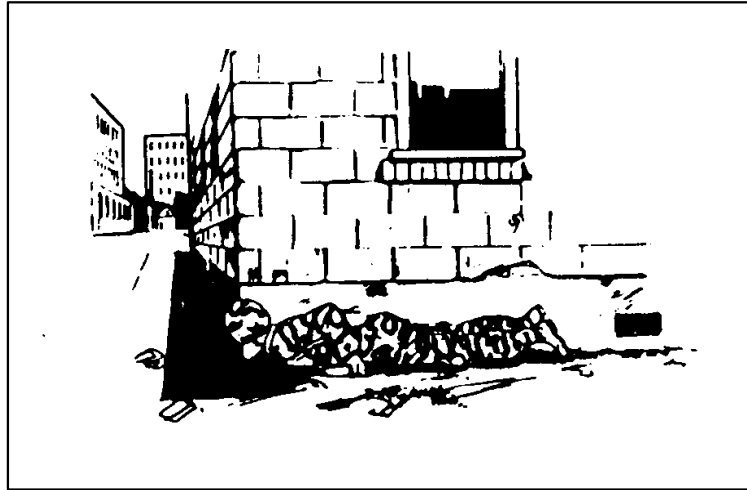
#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

- NOTES:**
- Individual, fire team, and squad movement techniques within urban terrain differ slightly from the basic movements used in normal field operations. Several movement techniques take on added importance during combat in urban terrain because of the special nature of the battle area.
  - In an urban terrain, the individual soldier and leaders are confronted with different types of obstacles that must be negotiated to eliminate or capture an enemy position. Street-to-street and house-to-house fighting give rise to many surprising situations, so alertness and all-round security are mandatory. The enemy may appear not only from the front, flanks, and rear, but also from above and below.
1. Follow general rules of movement:
    - a. Take care not to be silhouetted in doors or windows, or on rooftops.
    - b. Avoid open areas (streets, alleys, parks).
    - c. Make a visual reconnaissance of the next position before moving.
    - d. Conceal movement with smoke or covering fires, and by using buildings, rubble, and vegetation.
    - e. Always move quickly from one position to another.
    - f. Be alert and expect the unexpected.
  2. Observe around corners.
    - a. Lie flat on the ground, weapon at the side, then move forward slowly, ensuring that the weapon is not forward of the corner.

**NOTE:** Corners are hazardous to untrained soldiers who are not alert. The most common mistakes untrained soldiers make are: first, not recognizing the danger area; second, extending their weapons beyond the corner, which exposes their presence; and third, showing their heads at a height that enemy soldiers would expect to see them.

b. Expose the head slowly at ground level so that it appears to be a shadow. Expose the head only enough to observe around the corner ([Figure 1](#)).



**Figure 1. Observing around a corner.**

3. Move across open areas.

**NOTE:** Open areas, such as streets, alleys, and parks, should be avoided when possible. They are natural kill zones for enemy crew-served weapons. They can be crossed with less risk if basic cautions are applied.

- a. Make a visual reconnaissance of the area and position.
- b. Select a route that has some cover or concealment. If no cover or concealment is available, use smoke or covering fire provided by the rest of the element.
- c. Move in the most direct route to the selected position. Using the most direct route reduces the time of exposure to enemy fire. Also, moving quickly denies the enemy the opportunity to place well-aimed shots.
- d. Move from position to position without masking covering fires. When the next position is reached, be prepared to cover the movement of other members of the fire team or squad ([Figure 2](#)).



**Figure 2. Moving from cover to cover.**

- e. When two or more soldiers must move at the same time to another position—
  - (1) The group members must first position themselves so they are prepared to move to their next position.
  - (2) On a planned signal, the group members move across the open area to the next position. When moving, they should stay about 5 meters apart ([Figure 3](#)).



**Figure 3. Group moving to the next position.**



4. Move parallel to buildings.

a. Move along the walls. When moving parallel to a building, move along the wall as closely as possible. That denies an enemy soldier inside the building the chance to fire without exposing himself to fire from the covering force.

(1) Use all available cover and concealment, move with a low silhouette, and advance quickly from position to position. If smoke is available, use it.

(2) When possible, move in the shadows to conceal movement.

b. Move past the first floor windows.

**NOTE:** Windows are danger points. Most first-floor windows are head high, and an unsuspecting soldier might expose his head, giving the concealed enemy an excellent shot.

(1) The right way to pass first-floor windows is to stay as close to the building as possible. When the window is reached, duck the head well below the window.

(2) Always take care not to be silhouetted in a window ([Figure 4](#)).

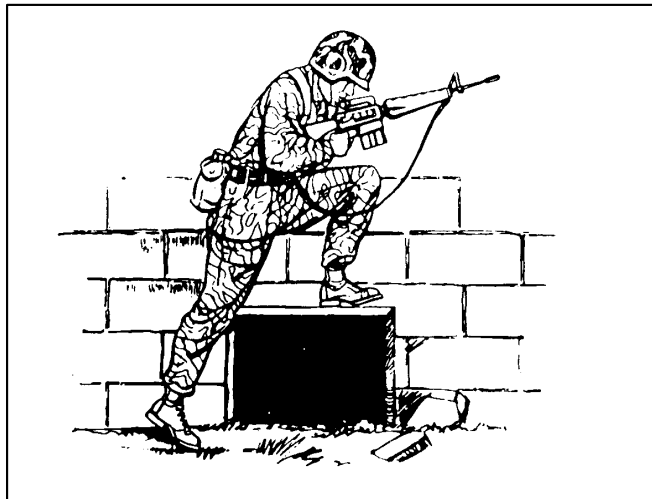


**Figure 4. Movement past window.**

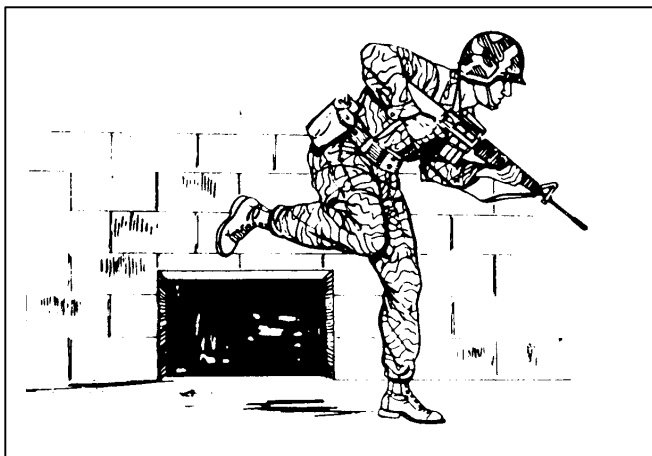
c. Move past the basement windows.

(1) Do not merely walk or run past a basement window; your legs will present a good target to an enemy gunner inside the building.

(2) The right way to pass a basement window is to keep as close to the building as possible and, when you reach the window, step or jump above and pass the window without exposing your legs ([Figure 5](#) and [Figure 6](#)).

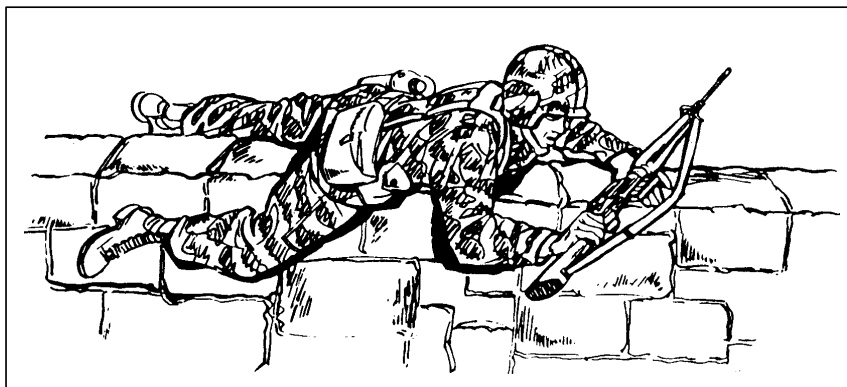


**Figure 5. Start of movement past basement window.**



**Figure 6. Completion of movement past basement.**

5. Cross obstacles (walls, fences, rooftops).
  - a. Move over walls and fences.
    - (1) Before crossing a wall or fence, look at and beyond it for booby traps, enemy positions, and covered or concealed positions.
    - (2) Move rapidly to the obstacle and roll quickly over it, keeping the lowest silhouette possible. Speed and a low silhouette deny the enemy a well-aimed shot.
    - (3) Maintaining a low silhouette, with the weapon at the ready position, move quickly to the nearest position ([Figure 7](#)).



**Figure 7. Crossing of an obstacle.**

- b. Move over rooftops.
  - (1) Visually reconnoiter the area and the route to the next position.
  - (2) Move quickly across the area, maintaining a low silhouette and using all available cover and concealment.

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide all materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier that he will be moving as a designated member of an assault element in urban terrain. The enemy strength and location are unknown.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Follow the general rules of movement. <ul style="list-style-type: none"> <li>a. Do not silhouette self.</li> <li>b. Avoid open areas.</li> <li>c. Make visual reconnaissance of the next position before moving.</li> <li>d. Conceal movement.</li> <li>e. Move rapidly.</li> <li>f. Stay alert.</li> </ul>	P	F
2. Observe around corners. <ul style="list-style-type: none"> <li>a. Lay flat, weapon at side; move forward slowly.</li> <li>b. Expose head slowly, at ground level, only long enough to observe around the corner.</li> </ul>	P	F

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
3. Move across open areas. a. Visually reconnoiter area and position. b. Select route with cover and concealment. c. Move in the most direct route. d. Move from position to position without masking covering fires. e. When two (or more) soldiers must move to the same position at the same time they— (1) Position themselves to prepare to move together. (2) Move together at a planned signal. (3) Stay about 5 meters apart.	P	F
4. Move parallel to the buildings. a. Move along the walls. (1) Move close to and parallel to the wall. (2) Move rapidly with a low silhouette. (3) Move in shadows when possible. b. Move past the first floor windows. (1) Stay close to the building; keep head below window. (2) Do not silhouette self in window. c. Move past the basement windows. d. Step or jump over windows.	P	F
5. Cross obstacles. a. Move over walls or fences. (1) Check the obstacle for booby traps, enemy positions, and covered and concealed positions. (2) Move quickly to the obstacle and quickly roll over it; maintain a low silhouette. (3) Move quickly to the nearest position; maintain a low silhouette. b. Move over rooftops. (1) Make a visual reconnaissance of the area and route. (2) Move quickly across the area, maintain a low silhouette, and use all available cover.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

FM 90-10-1

**SUSTAIN, GENERAL**  
**PRACTICE PREVENTIVE MEDICINE**  
**081-831-1043**

**CONDITIONS**

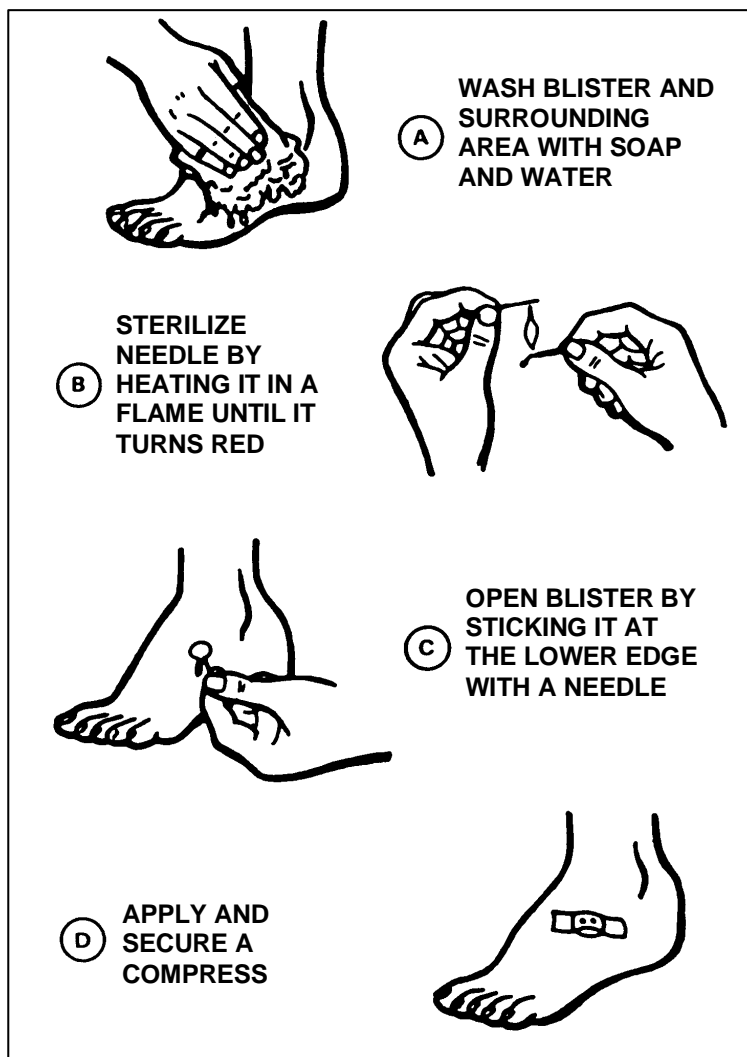
Squad is participating in a road march, operation, or movement.

**STANDARDS**

Before and during the conduct of the mission, care for the feet before and during the march or movement; use iodine tablets to purify water; properly dispose of human waste IAW unit SOP or guidance from higher headquarters; and prevent or respond correctly to heat and cold injuries.

**TRAINING AND EVALUATION**  
**Training Information Outline**

1. Care of the feet.
  - a. Before the march, be sure footgear is the proper type, is correctly fitted, and is broken in; that socks are clean and free of holes or knotty darns; and that you have foot powder and more than one pair of socks. Never break in a new pair of shoes or boots on a march. Treat and protect blisters ([Figure 1](#)), pressure spots, and infections before the march starts.



**Figure 1. Treat and protect blisters.**

b. On the march, keep the feet as dry as possible. If socks become damp or wet, change them for dry ones when possible. Dry socks by putting them under your shirt around the waist. Promptly relieve tender pressure spots on the feet by adjusting gear or by applying adhesive tape. Once or twice daily during the march, lightly dust the feet with foot powder.

c. Inspect the feet at rest periods. If possible, wash them during the noon break. Raise the feet while resting to help reduce congestion and swelling.

## 2. Purifying water.

a. Before using iodine tablets, check them for physical change. Old tablets may have lost their disinfecting ability. If tablets are not steel gray, or if they are stuck together or crumbled, do not use them.

b. Follow these procedures to treat water in a canteen with iodine tablets:

(1) Fill the canteen with the cleanest, clearest water available.

(2) Add one iodine tablet to a 1-quart canteen if the water is clear; add two tablets if the water is cloudy. Double the amounts for a 2-quart canteen.

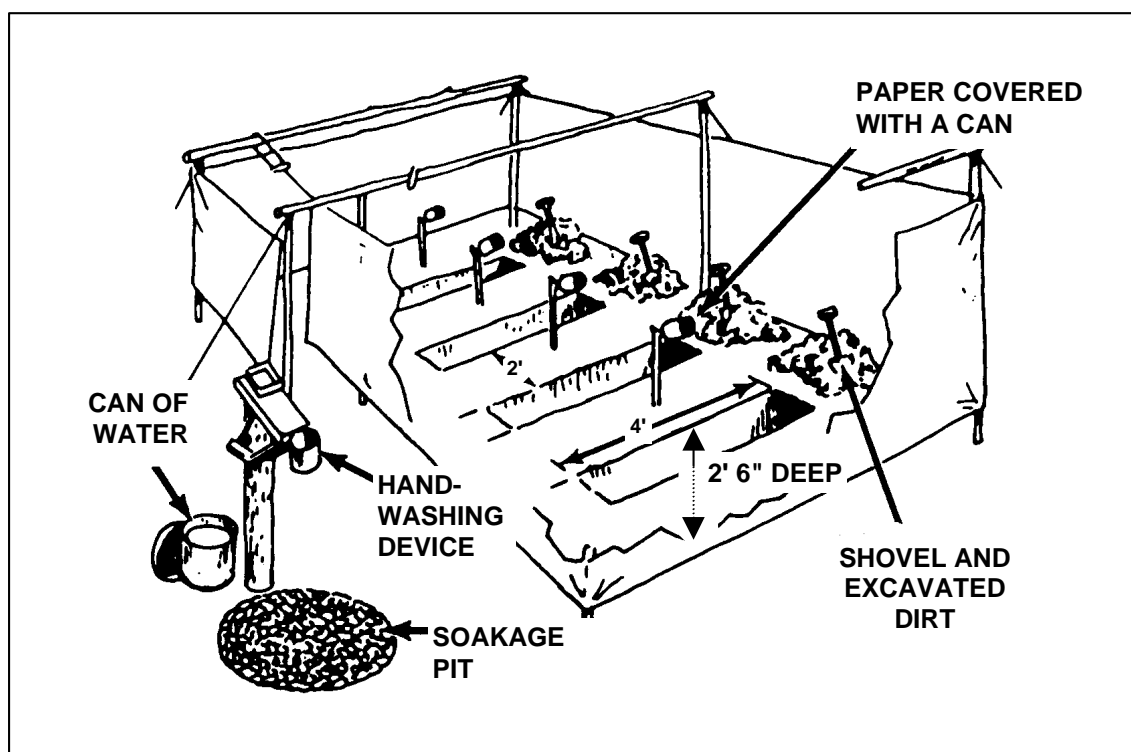
(3) Place the cap on the canteen loosely, wait 5 minutes, and shake the canteen well. Allow leakage to rinse the threads around the neck of the canteen.

(4) Tighten the cap and wait 20 minutes more before using the water.

3. Disposing of human solid waste, except when unit SOP or higher headquarters provides other specifications.

a. When on the march, use an individual cathole latrine during short halts. Dig it about 1 foot deep. Completely cover and pack it down after use.

b. For overnight bivouac, use the straddle trench (Figure 2). Building details are given in FM 21-10.



**Figure 2. Straddle trench.**

4. Heat and cold injuries.

a. Preventing heat injuries. The soldier should ensure he satisfies his water and salt needs.

(1) Water needs. Your body needs a minimum amount of water for cooling, waste elimination, and metabolism. Any attempt to train the body to use less water can be harmful and may lead to heat injuries. Drink water when needed to quench the thirst.

(2) Salt needs. When water is lost through sweating, so is vital body salt. When water intake is less than 1 gallon a day, an ordinary diet contains enough salt to make up this loss. If daily water intake increases, lightly salt food from the field rations pack.

b. Preventing cold injuries. In cold weather—



(1) Drinking a sufficient amount of water is as important as it is in hot weather. In cold weather, it is difficult to realize that your body is losing fluids and salt. Sweat evaporates rapidly or is absorbed so completely by the layers of clothing that it is seldom visible on the skin.

(2) Clothing for cold weather protects, insulates, and ventilates. It protects by covering the body. It insulates by trapping air that has been warmed by the body and holding it near the skin to prevent loss of body heat. It ventilates by allowing an exchange of air through the various layers of clothing, which prevents overheating and excessive sweating. Clean, dry clothing should be worn in loose layers to allow free movement and exercise.

(3) Good circulation should be maintained by exercising the feet and legs. This is important during rest breaks.

(4) Troops should be paired as “buddies” in cold weather to remind each other to do warming exercises often and to watch for signs of frostbite and trench foot. FM 21-11 gives signs and first aid for cold-weather injuries.

**NOTE:** FM 21-11 discusses first aid for heat injuries.

## EVALUATION PREPARATION

*Setup:* In a preselected area before or during a road march, or in a bivouac site, each individual must practice preventive medicine.

*Brief Soldier:* Tell the soldier that he will be evaluated on his ability to properly demonstrate the procedures for foot care before and during a road march, to purify water, to properly dispose of human solid waste (in the absence of unit SOP or guidance from higher headquarters), and to prevent head and cold injuries.

**NOTE:** During training, comply with unit SOP, local regulations, or both concerning the cutting of live vegetation, digging holes, and preventing erosion.

## EVALUATION GUIDE

Performance Measures	Results	
1. Properly take care of the feet before the road marches.	P	F
a. Make sure boots are properly fitted.		
b. Make sure boots are broken in (not new boots).		
c. Wear clean socks, free of holes and knotty darns.		
2. Take proper care of the feet during the road marches.	P	F
a. Keep feet as dry as possible.		
b. Change damp socks.		

**EVALUATION GUIDE****Performance Measures****Results**

- c. Dust feet lightly with foot powder.
  - d. Adjust gear or apply adhesive tape to relieve the tender spots on the feet.
- 
- |   |   |   |
|---|---|---|
| 3. Purify water with iodine tablets.  | P | F |
| a. Inspect the iodine tables for a physical change (for example, inspect to ensure tablets are steel gray, and are not crumbled or stuck together). |   |   |
| b. Fill canteen with clean water.   |   |   |
| c. Add one iodine tablet to a 1-quart canteen filled with clear water.  |   |   |
| d. Add two iodine tablets to a 2-quart canteen filled with clear water.   |   |   |
| e. Add two iodine tablets to a 1-quart canteen filled with cloudy water.  |   |   |
| f. Loosely tighten canteen cap and wait five minutes.   |   |   |
| g. Shake canteen, allowing leakage to rinse the threads around the neck.  |   |   |
| h. Tighten the cap and wait 20 minutes longer before using.   |   |   |
- 
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|---|---|---|
| 4. Dispose of human solid waste.                | P | F |
| a. Dig a cathole (short stops).                 |   |   |
| b. Use the straddle trench (overnight bivouac). |   |   |
- 
- |   |   |   |
|---|---|---|
| 5. Prevent heat injuries (self-evaluation).                                   | P | F |
| a. Drink more water than needed to quench thirst.                             |   |   |
| b. When intake of water is more than 1 gallon, slightly increase salt intake. |   |   |
- 
- |   |   |   |
|---|---|---|
| 6. Prevent cold injuries.                         | P | F |
| a. Drink more water than needed to quench thirst. |   |   |
| b. Wear clothing loosely and in layers.           |   |   |
| c. Pair with a "buddy."                           |   |   |
- 
- |   |   |   |
|---|---|---|
| 7. Take care of blisters.                                     | P | F |
| a. Wash the blister and surrounding area with soap and water. |   |   |
| b. Sterilize the needle (using a flame).                      |   |   |
| c. Open blister at lower end.                                 |   |   |
| d. Apply and secure compress.                                 |   |   |

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

None

**Related**

FM 21-10

FM 21-11

## **NBC**

### **MARK NBC CONTAMINATED AREA 031-503-1021**

#### **CONDITIONS**

Given an area where NBC weapons have been used. You are in the appropriate MOPP level. You have NBC markers (radiological, biological, and chemical), grease pencil, information necessary to prepare a marker for each type of contamination, the means to hold the markers in place, and a designated location for the sign.

#### **STANDARDS**

Select the appropriate marker based on information provided, record the required information on the marker, and emplace the marker properly.

#### **TRAINING AND EVALUATION Training Information Outline**

1. Once contamination has been located and identified in an area, the area must be marked to warn friendly troops. Markers must be placed where they can be easily seen.
  - a. Radiological contamination. Prepare a marker labeled ATOM.
    - (1) Print all information on the front side of the marker so that the word ATOM is facing toward you in an upright position.
    - (2) Print the dose rate in centigray per hour (cGyph).
    - (3) Print the date and time (local or ZULU, state which).
    - (4) Print the date and time (local or ZULU, state which) of the detonation, if known. (If the date and time is not known, print UNKNOWN.)
  - b. Biological contamination. Prepare a marker labeled BIO.
    - (1) Print all information on the front side of the marker so that the word BIO is facing toward you in an upright position.
    - (2) Print the type of agent detected. (If you do not know, print the word UNKNOWN.)
    - (3) Print the date of detection beneath the type of agent.
    - (4) Print the time (local or ZULU, state which) of detection beneath the date of detection.
  - c. Chemical contamination. Prepare a marker labeled GAS.
    - (1) Print all information on the front side of the marker so that the word GAS is facing toward you in an upright position.
    - (2) Print the type of agent detected. (If you do not know, print the word UNKNOWN.)
    - (3) Print the date and time (local or ZULU, state which) of detection beneath the type of agent detected.

2. Position the marker so that the recorded information faces away from the area of contamination and the marker can be easily seen.
  - a. Attach the markers to objects, such as trees or poles, so they are clearly visible from all probable routes through the contaminated area.
  - b. Place each marker so that the next one can be seen from the one just emplaced.
  - c. For radiological contamination, place the markers at the location where the dose rate is measured at 1 cGyph or more.

### EVALUATION PREPARATION

*Setup:* Simulate a contaminated environment. Before telling the soldier to mark the contaminated area, tell him how much radiation is present.

*Brief Soldier:* Tell the soldier to mark an NBC contaminated area.

### EVALUATION GUIDE

Performance Measures	Results	
1. Select appropriate marker.	P	F
2. Record required information on the marker.	P	F
3. Emplace the marker.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

Required	Related
None	FM 3-3 TM 3-9905-001-10

## DECONTAMINATE EQUIPMENT USING M13 DECONTAMINATING APPARATUS, PORTABLE 031-503-1022

### CONDITIONS

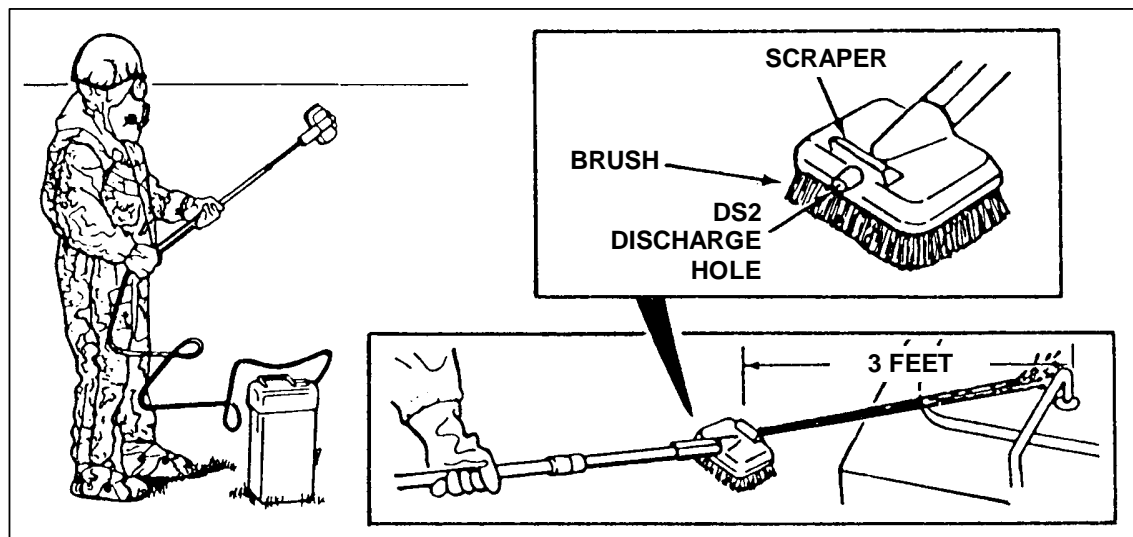
Given an area of chemical contamination on a vehicle or equipment that your supervisor directs you to decontaminate with an assembled M13 decontaminating apparatus, portable (DAP). You are in MOPP4.

### STANDARDS

Decontaminate specified areas by spraying DS2 from the M13 DAP and by scrubbing.

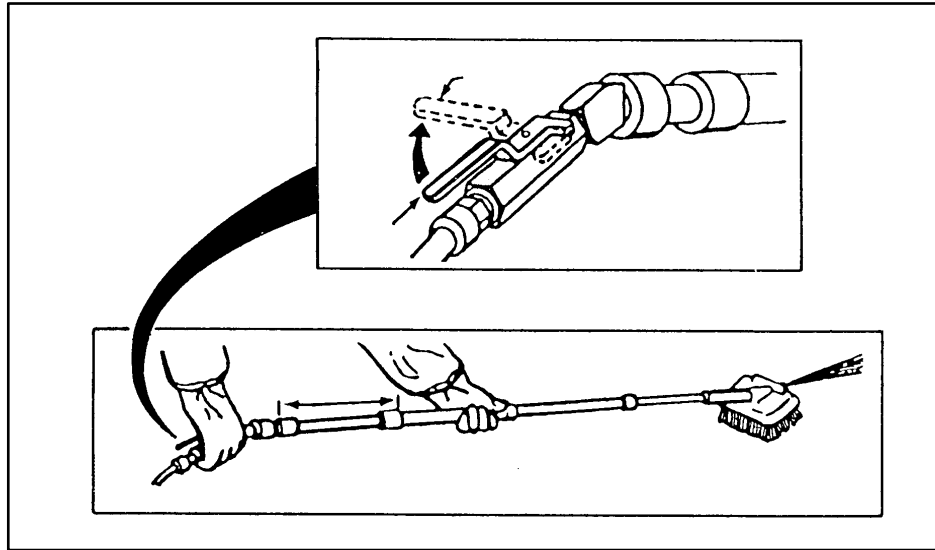
### TRAINING AND EVALUATION Training Information Outline

1. Hold the brush about 3 feet from the contaminated area ([Figure 1.](#))



**Figure 1. Hold the brush 3 feet from the contaminated area.**

2. Start at the highest point on the equipment and work downward. This prevents contamination from flowing over decontaminated areas.
3. Open the pump valve by turning it to the IN-LINE position ([Figure 2.](#))



**Figure 2. Open pump valve.**

4. Pump until DS2 flows from the hole in the brush.
5. Pump one stroke, sweeping an area of 4 to 5 feet while spraying DS2. Close the pump valve.
6. Use the brush to scrub DS2 over contaminated surfaces.
7. Keep repeating steps 1 through 6 until surfaces being decontaminated are wet.
8. Complete steps 1 through 5 in sequence.

**NOTE:** Whenever possible, remove DS2 from decontaminated surfaces after a contact time of 30 minutes by rinsing with water or wiping with rags.

### EVALUATION PREPARATION

**Setup:** Evaluate this task during a field exercise or a normal training session. For test purposes, the soldier must be in MOPP4 with the M13 DAP available and already assembled, and must have a selected piece of equipment or a vehicle that is contaminated.

**NOTE:** You should not use real DS2 during training. Paint a training container black and fill it with water or a mixture of water and antifreeze to simulate DS2.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Start at the highest point of the equipment and hold the brush about 3 feet from the contaminated area.	P	F
2. Open the pump valve by turning it to the IN-LINE position.	P	F
3. Pump one stroke, sweeping an arc of 4 to 5 feet while spraying DS2. Close the pump valve.	P	F
4. Use the brush to scrub DS2 over contaminated surface.	P	F
5. Repeat performance measures 1 through 4 until surfaces being decontaminated are wet.	P	F
<b>NOTE:</b> Whenever possible, after 30 minutes contact time, rinse or wipe off with rags all items that have been sprayed or scrubbed with DS2.	P	F
6. Complete performance measures 1 through 5 in sequence.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
None	FM 3-5 TM 3-4230-214-12&P



## **DECONTAMINATE EQUIPMENT USING THE ABC M11 DECONTAMINATING APPARATUS 031-503-2002**

### **CONDITIONS**

Given an area of chemical contamination on a vehicle or equipment that your supervisor directs you to decontaminate with an empty ABC M11 decontaminating apparatus, two spare nitrogen cylinders, and a 1 1/3-quart can of DS2. You are in MOPP4.

### **STANDARDS**

Decontaminate specified contaminated areas by spraying DS2 from ABC M11.

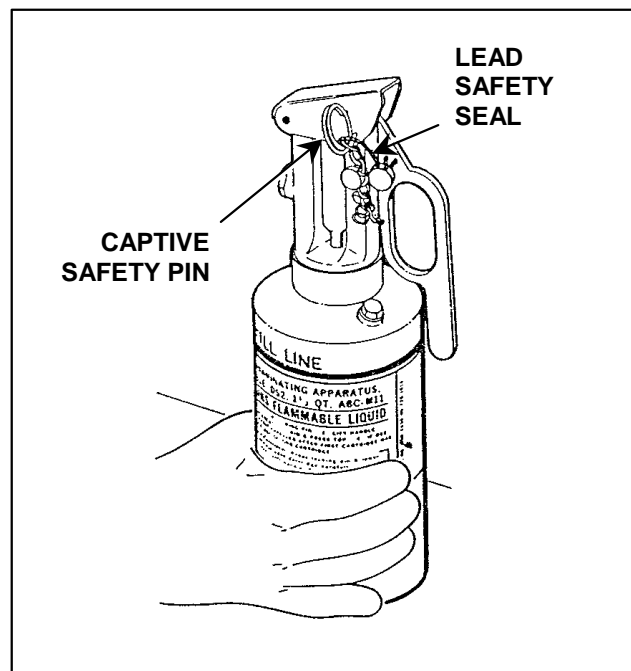
### **TRAINING AND EVALUATION** **Training Information Outline**

1. Fill the M11 apparatus.

#### **WARNING**

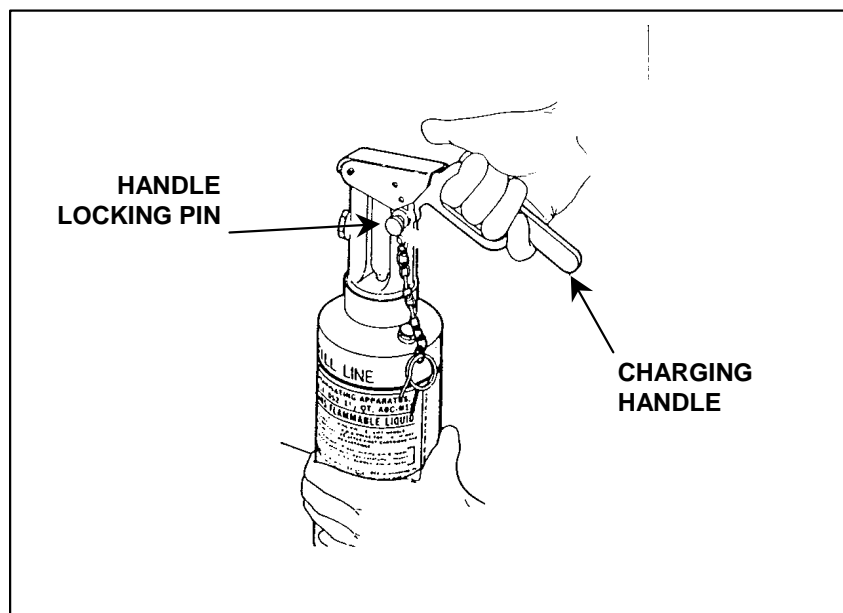
**Wear rubber gloves to protect your hands when handling DS2. For training purposes, substitute 0.5 ounce of corrosion inhibitor and water for the DS2.**

- a. Unscrew the spray head from the container.
  - b. Pour the contents of 1 1/3-quart can of DS2 into container through the opening in the top of the apparatus. If filling from a large container, pour in DS2 to the level of the yellow line marked FILL LINE. Use the end of the container neck inside the container body as a fill guide since it is level with the yellow fill line.
  - c. Ensure the container's preformed packing is in place on the spray head and ensure that it is in good condition. Screw the spray head firmly into the opening in the container.
2. Pressurize the M11 apparatus.
    - a. Withdraw the captive safety pin (Figure 1), breaking the safety seal.



**Figure 1. Captive safety pin.**

b. Rest the container on a solid surface and slowly raise the handle until the locking pin springs out and locks the handle in place ([Figure 2](#)). Raising the handle punctures the nitrogen-filled container, pressurizing the container.



**Figure 2. Locking pin.**

3. Decontaminate equipment.

**WARNING**

1. Do not use DS2 to decontaminate personnel. It irritates the skin and eyes. If DS2 gets on your skin, blot off the DS2 and rinse off your skin with water.
2. Wear a chemical/biological protective mask when using the apparatus to decontaminate.

- a. Spray DS2 by depressing the thumb lever (Figure 3).



**Figure 3. Thumb lever.**

b. Spray the most-touched and most-used parts of vehicles such as door handles, steering wheels, controls, seats, dashboards, levers, gasoline caps, and tools. Hold the apparatus upright to force as much liquid as possible from the container. Remember that you can discharge the contents of one full container in about 30 seconds of continuous spraying time.

c. After you have expended the first nitrogen-filled cylinder, shake the container to determine whether you have completely emptied it. Use a second nitrogen-filled cylinder to expel remaining contents.

**WARNING**

Place the handle in the lowered position before installing the nitrogen-filled cylinder to prevent premature puncturing of the cylinder and its expulsion out of the spray head.

d. To use the spare nitrogen-filled cylinder, depress the handle locking pin and lower the handle. Raise the thumb lever and push the expended cylinder out of the spray head body. Discard the expended cylinder. Insert the spare nitrogen-filled cylinder in the spray head body, neck down. Release the thumb lever and repressurize the apparatus repeating step 2b.

e. When you have expended the charge, depress the handle locking pin and lower the handle. If you have completed the spraying, reinstall the captive safety pin and replace the apparatus in the mounting bracket. If not, repeat steps 1 through 3 until you have finished spraying down the vehicle or equipment.

f. Whenever possible, rinse all items sprayed with DS2. However, do not rinse them until at least 30 minutes after you finish spraying them.

### EVALUATION PREPARATION

*Setup:* Do not use DS2 for training. Use 0.5 ounce of corrosion inhibitor (NSN 6850-00-865-2916) and water. Before setting up for evaluation, refer to paragraph 2-7 of TM 3-4230-204-12&P. For test purposes, the soldier must wear MOPP4. You will specify the area on a vehicle or piece of equipment that the soldier must decontaminate using the ABC M11.

*Brief Soldier:* Tell the soldier to decontaminate equipment using ABC M11 decontaminating apparatus.

### EVALUATION GUIDE

#### Performance Measures

#### Results

- |   |   |   |
|---|---|---|
| 1. Fill M11 decontaminating apparatus.                                      | P | F |
| a. Unscrew spray head assembly from container body.                         |   |   |
| b. Fill liquid to the yellow fill line (1 1/3 quarts).                      |   |   |
| c. Check preformed packing in the spray head assembly.                      |   |   |
| d. Screw spray head assembly firmly into the opening of the container body. |   |   |
| 2. Pressurize M11 decontaminating apparatus.                                | P | F |
| a. Withdraw captive safety pin.   |   |   |
| b. Place M11 on a solid surface.  |   |   |
| c. Raise charging handle until locking pin springs out.                     |   |   |
| d. Puncture nitrogen-filled cylinder to pressurize M11 container.           |   |   |
| 3. Decontaminate equipment.   | P | F |
| a. Spray mission-essential parts of equipment.                              |   |   |
| b. Use second nitrogen cylinder to expel the remaining contents, if any.    |   |   |
| c. Depress the handle locking pin and lower the handle.                     |   |   |
| d. Replace used nitrogen-filled cylinder.                                   |   |   |

## EVALUATION GUIDE

### Performance Measures

### Results

- e. Reinstall captive safety pin.
- f. Replace apparatus in the mounting bracket.

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

TM 3-4230-204-12&P

## **NIGHT VISION DEVICES**

### **MAINTAIN NIGHT VISION GOGGLES AN/PVS-7B 071-710-0009**

#### **CONDITIONS**

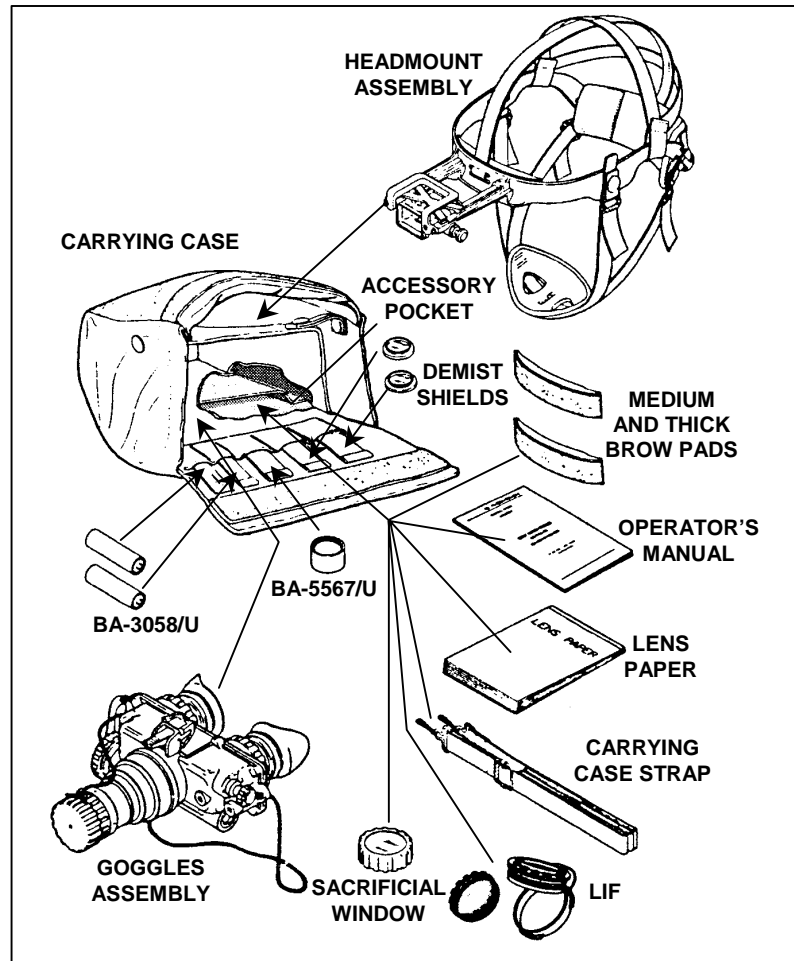
Given night vision goggles AN/PVS-7B with components, accessories, batteries, clean water, and clean, lint-free cloths, and a requirement to perform required operator maintenance on the goggles.

#### **STANDARDS**

Clean and inspect night vision goggles, components, and accessories for serviceability; report unserviceable items to the supervisor. Properly stow the goggles and accessories. Comply with all warnings and cautions associated with these goggles.

#### **TRAINING AND EVALUATION** **Training Information Outline**

1. Inventory the carrying case for the following items ([Figure 1](#)).
  - a. Headmount assembly.
  - b. Demist shields.
  - c. Brow pads--medium and thick (the thin pad is attached to the headmount assembly).
  - d. Operator's manual.
  - e. Lens paper.
  - f. Carrying case strap.
  - g. Light interference filter (LIF).
  - h. Sacrificial window.
  - i. Batteries: (2 BA-3058/U or 1 BA-5567/U).
  - j. Goggles assembly.
2. Clean the AN/PVS-7B.
  - a. Clean all optical surfaces with lens paper dampened with clean water (water temperature should be between 70° and 80° Fahrenheit), and wipe clean.
  - b. Use a clean, lint-free cloth, dampened with clean water, to remove all dirt and grease from all exterior surfaces.



**Figure 1. AN/PVS-7B night vision goggles with case and accessories.**

### CAUTION

Handle all optical components with extreme care. Protect against dirt, dust, fingerprints, and excessive moisture.

3. Inspect the accessories and goggles for conditions indicated. Take corrective action as indicated for damaged items ([Figure 2](#)).

a. Goggles assembly.

(1) Inspect all lenses for dirt, fingerprints, residue, chips, or cracks. If necessary, use clean water and lens tissues to wash and dry the lens. If you observe chips or cracks in a lens, refer to your supervisor for a higher level of maintenance.

(2) Inspect the goggles housing for damage. If you observe chips or cracks, refer to your supervisor for a higher level of maintenance.

(3) Inspect the battery compartment for corrosion, defective battery cap spring contact, and preformed packing in the cap. If you find corrosion, or if the battery cap spring is defective, refer to your supervisor for a higher level of maintenance.

(4) Check the diopter adjustment rings to make sure the eyepieces move freely. If they do not, refer to your supervisor for a higher level of maintenance.

(5) Check the inter-pupillary adjustment on the eyepiece to see if it moves freely. If it does not, refer to your supervisor for a higher level of maintenance.

(6) Turn the objective lens focus knob to make sure it moves freely. The knob should turn about 1/3 turn, or 120 degrees. If the knob does not move freely, refer to your supervisor for a higher level of maintenance.

(7) Inspect for bent, broken, dried, cracked, torn, dusty, dirty, or improperly fitting eye cups. If necessary, clean and dry the eye cups with clean water and a lens tissue. If the eye cups are defective, refer to your supervisor for a higher level of maintenance.

(8) Check the OFF-ON-PULL/IR switch. Move the switch from OFF, to ON, and to PULL/IR. Each position should have a definite stopping point. If the knob is broken or missing, or if the switch has no definite stops, refer to your supervisor for a higher level of maintenance.

(9) Inspect the headmount assembly (Figure 3).

(a) Inspect the headmount strap assemblies and brow pads for holes, crack, defective fasteners, or contamination. Remove and replace the brow pad by pulling it out (hook-pile tape holds the brow pad in place). Press in a new pad.

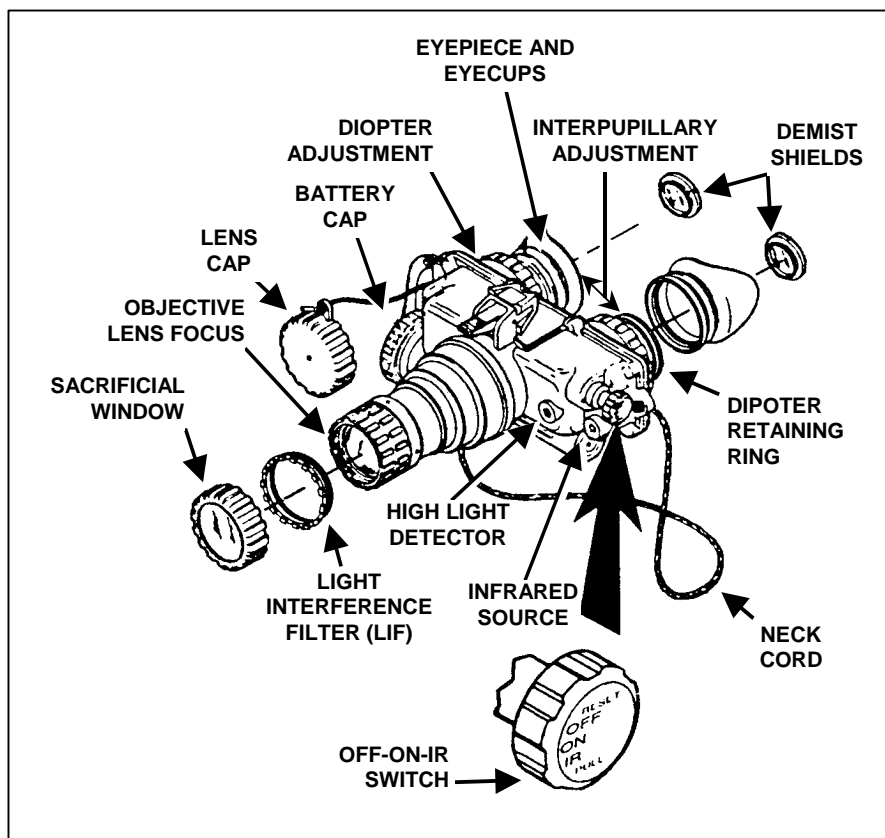
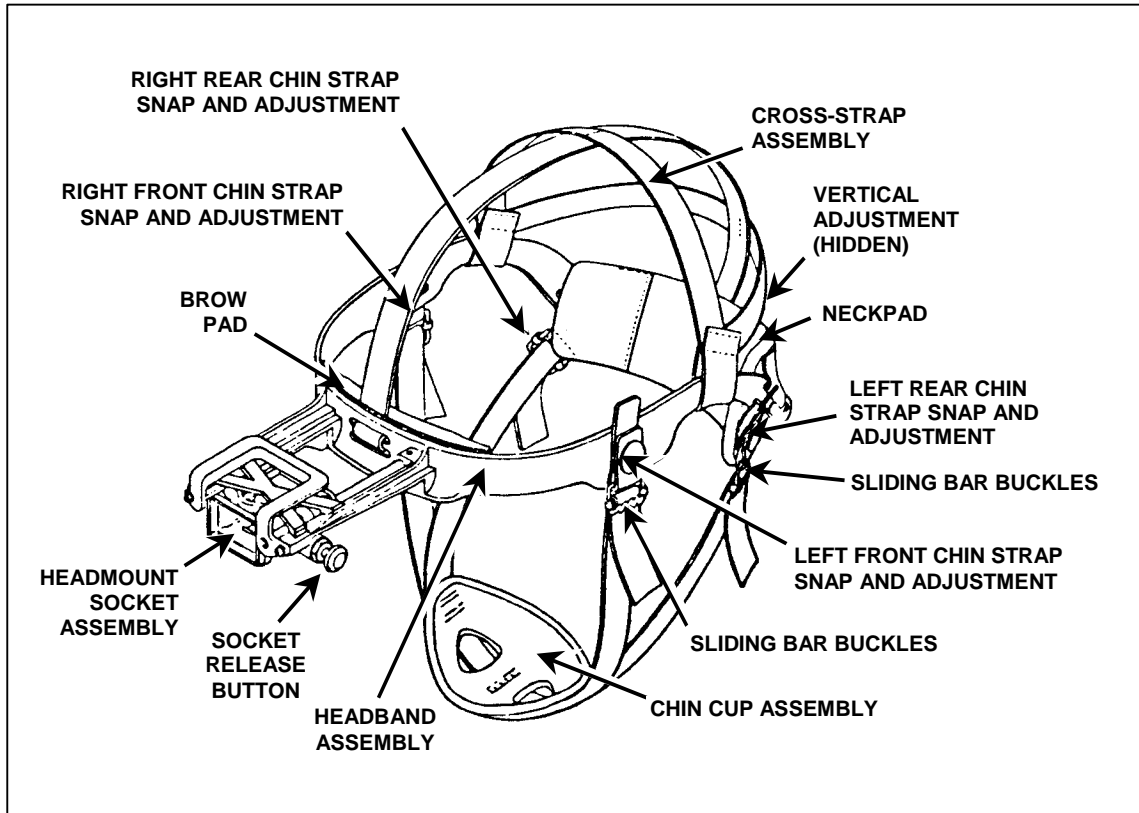


Figure 2. Functional features and accessories.





**Figure 3. Headmount assembly.**

(b) Inspect the headmount assembly eye relief. Press the socket release button and check the socket assembly to see if it moves freely. Inspect for dirt and damage. Clean it if needed. If it does not move freely, or if you observe damage, refer to your supervisor for a higher level of maintenance.

(c) Inspect the headmount socket and the goggles latch. Inspect and clean the headmount socket. Check to see if the socket and latch work correctly by inserting the goggles latch into the socket. Verify that they link securely. If the socket assembly does not work properly or if you observe damage, refer to your supervisor for a higher level of maintenance.

(10) Inspect the demist shields for dirt, dust, scratches, or damage. Clean the dry shields only with dry lens tissues.

(11) Inspect the sacrificial window for dirt, dust scratches, or damage. If necessary, wash it with clean water and dry it with a lens tissue. If you observe damage, refer to your supervisor for a higher level of maintenance.

(12) Inspect the neck cord for damaged and frayed ends. Re-tie if necessary. If you observe damage, refer to your supervisor for a higher level of maintenance.

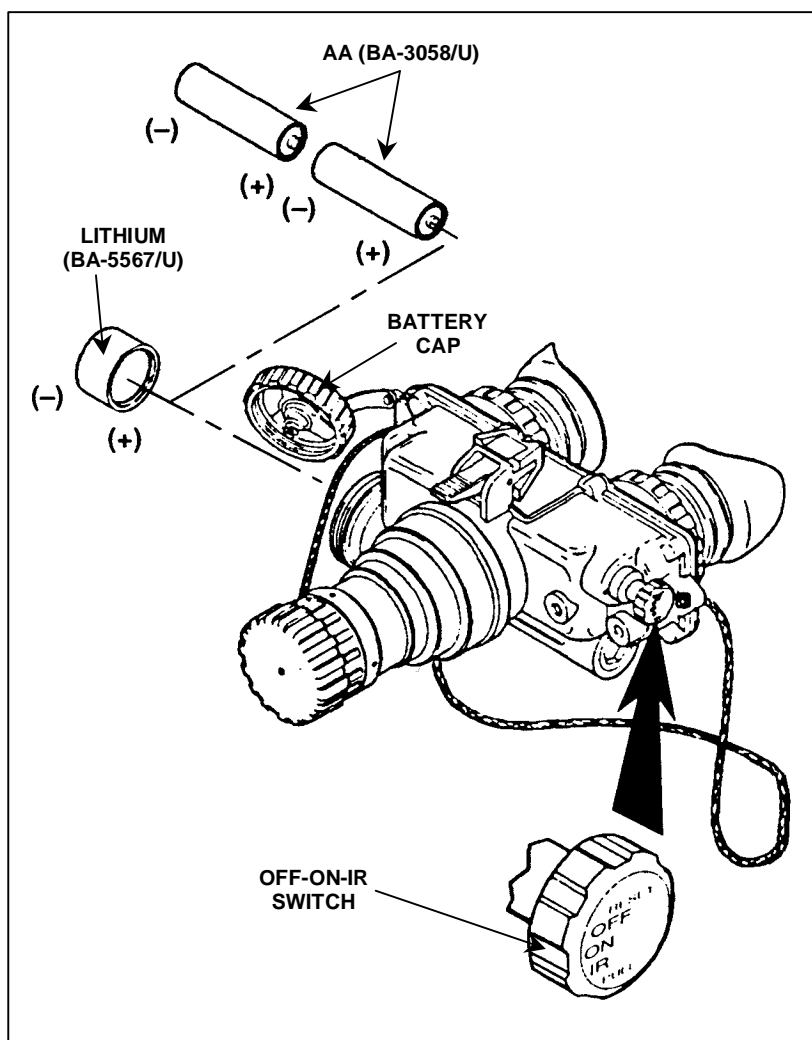
(13) Inspect the carrying case. Remove all accessories, and shake out all loose dirt or foreign matter. Wipe the interior and exterior with a clean, dry, lint-free cloth. If necessary, use a mild detergent to remove dirt and grease.

(14) Inspect the 3X magnifier. Inspect all lenses for dirt, fingerprints, residue, chips or cracks. If necessary, clean and the dry lens with clean water and a lens tissue. Inspect

the housing for damage. If you observe any chips or cracks in the housing, refer to your supervisor for a higher level of maintenance.

(15) Inspect the snap-on compass for dirt and damage. If necessary, clean it with clean water and a cloth. If you observe damage, refer to your supervisor for a higher level of maintenance.

4. Perform an operational check.
  - a. Install batteries (Figure 4).



**Figure 4. Battery installation.**

- (1) Check and make certain that the OFF-ON-PULL/IR switch is in the OFF position.
- (2) Comply with all cautions, warning, and danger statements.
- (3) Remove the battery cap. Insert two AA batteries (BA-3058/U) or one lithium battery (BA-5567/U) in the battery compartment, with the positive end (+) first.
- (4) Replace the battery cap. Tighten it firmly to ensure a watertight seal (Figure 4).

**WARNING**

- Alkaline, lithium, and mercury batteries are potential hazards. Do not heat, puncture, disassemble, short-circuit, try to recharge, or otherwise tamper with the batteries.
- If the battery compartment becomes unusually hot, turn off the equipment. Try to wait until the batteries cool before you remove them.
- Batteries have safety vents to prevent explosion. When they vent, you will notice an irritating odor or hear the sound of gas escaping. After batteries vent, they are fairly safe, but you must still handle them with care.

**DANGER**

**IF YOU INHALE SULPHUR DIOXIDE, SEEK MEDICAL ATTENTION.**

b. Check goggles for proper operation. Perform the following procedures only in darkened conditions. If you must check the goggles during daylight, use the lens cap to cover the objective lens:

(1) Position the OFF-ON-PULL/IR switch to ON. Note the green glow that gradually appears in each eyepiece.

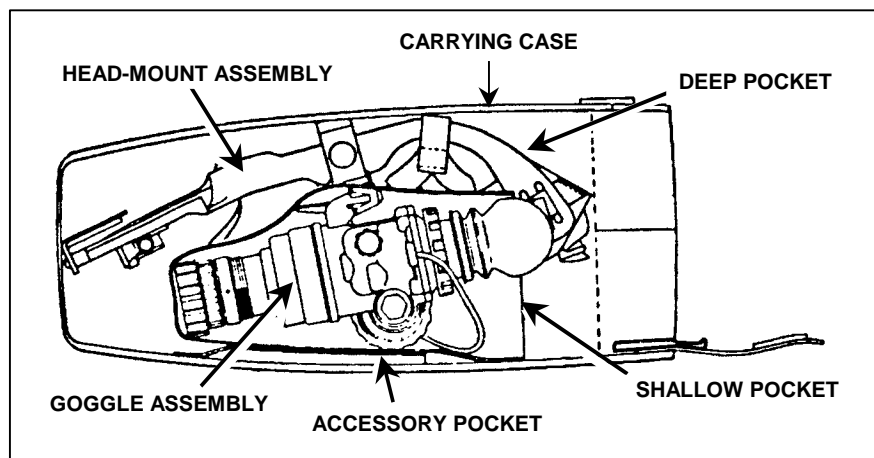
(2) Pull the OFF-ON-PULL/IR knob. Rotate it clockwise to the IR position. Note the red light that appears in the left eyepiece. This light indicates that the IR source is operating. The IR source is located on the left front of the goggles. Do not block the IR source when operating the goggles.

(3) Turn the OFF-ON-PULL/IR switch counterclockwise to the OFF position. Note that the red light and green glow disappear.

(4) Shut down the goggles by positioning the OFF-ON-PULL/IR switch to OFF.

5. Stow the night vision goggles ([Figure 5](#)).

- a. Unscrew the battery cap, remove battery, and replace the battery cap.
- b. Place demist shields and battery into their proper carrying case Pocket.



**Figure 5. Goggles stowed in the carrying case.**

### CAUTION

Place the sacrificial window at the bottom left or right corner of the carrying case accessory pocket to prevent damage to window.

- c. Place the lens paper, sacrificial window, and operator's manual in the accessory pocket located under the shallow pocket that contains the goggles.
- d. Place the goggles (objective lens down) into shallow pocket of carrying case.
- e. Stow the headmount assembly in the deep pocket of the carrying case. Close the carrying case.

## EVALUATION PREPARATION

*Setup:* Provide the soldier with equipment and materials listed in conditions.

*Brief soldier:* Tell him that he is to inspect the components, accessories, and goggles for completeness and serviceability, and to clean them as required. Then he is to perform an operational check, shut down the goggles, and stow them and their accessories.

## EVALUATION GUIDE

### Performance Measures

### Results

- |   |   |   |
|---|---|---|
| 1. Inventory carrying case for correct content.                           | P | F |
| 2. Clean the AN/PVS-7B and accessories using correct cleaning techniques. | P | F |

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
3. Inspect accessories and goggles for serviceability.	P	F
4. Perform an operational check.	P	F
5. Stow the night vision goggles.	P	F
6. Comply with safety precautions and warnings.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
TM 11-5855-262-10-2	None

## **OPERATE NIGHT VISION GOGGLES AN/PVS-7B 071-710-0008**

### **CONDITIONS**

At night, given night vision goggles AN/PVS-7B with components, accessories, and batteries.

### **STANDARDS**

Inspect night vision goggles AN/PVS-7B for best operational capability. Correctly shut down goggles. Properly stow goggles and all accessories in carrying case. Comply with all warnings and cautions associated with the goggles.

### **TRAINING AND EVALUATION** **Training Information Outline**

#### **WARNING**

To avoid personal injury or damage to the AN/PVS-7B goggles, consider the following limitations and safety precautions while using the goggles:

1. The goggles require some moonlight, starlight, or both to operate.
2. The amount of available light determines the goggles' level of performance.
3. Operating in shadow from buildings or trees reduces nightlight.
4. The goggles are less effective for viewing into shadowed and other darkened areas than in lighter areas.
5. The goggles are less effective when viewing through rain, fog, sleet, snow, or smoke.
6. When using goggles from a moving vehicle in the fog, rain, sleet, snow, or smoke, vehicle speed must be reduced to avoid over-driving the range of view.
7. Between the last and first quarters of the moon, during operations requiring the use of a protective mask, or both, the assistant driver should use a night-vision device.

1. Prepare the goggles for operation.

**CAUTION**

Handle all optical components with extreme care and protect against dirt, dust, fingerprints, and excessive moisture.

a. Inventory carrying case content to ensure the following accessories are present (Figure 1):

- (1) Headmount assembly.
- (2) Demist shields.
- (3) Brow pads (medium and thick) (thin pad is attached to headmount assembly).
- (4) Operator's manual.
- (5) Lens paper.
- (6) Carrying case strap.
- (7) Light interference filter (LIF)
- (8) Sacrificial window
- (9) Batteries: (2 BA-3058/U or 1 BA-5567/U)
- (10) Goggles assembly

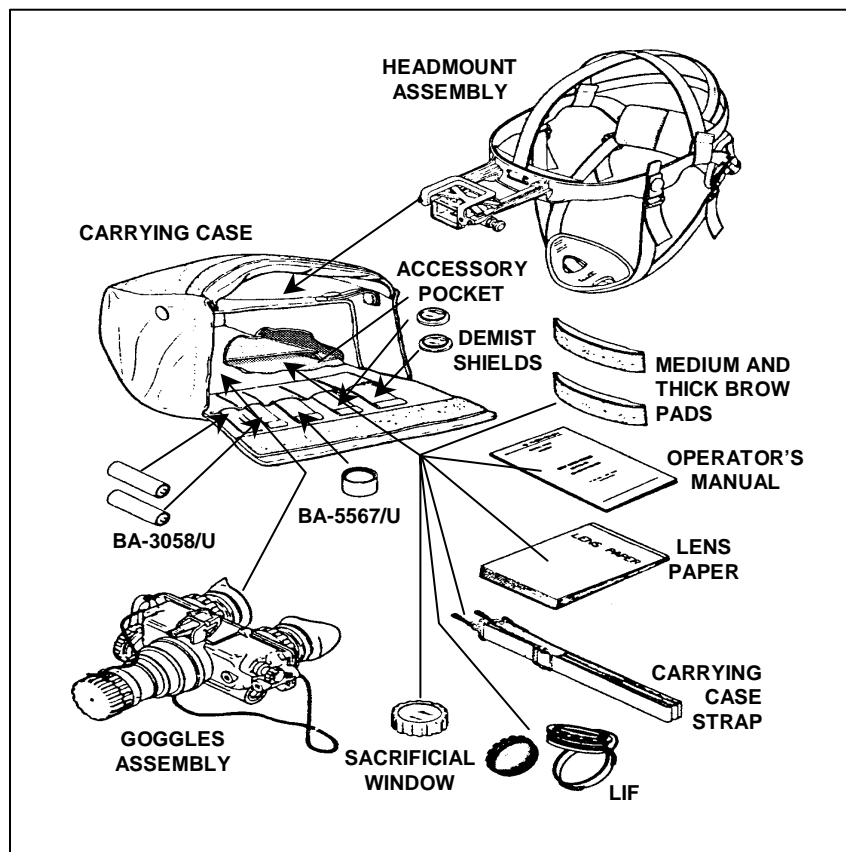
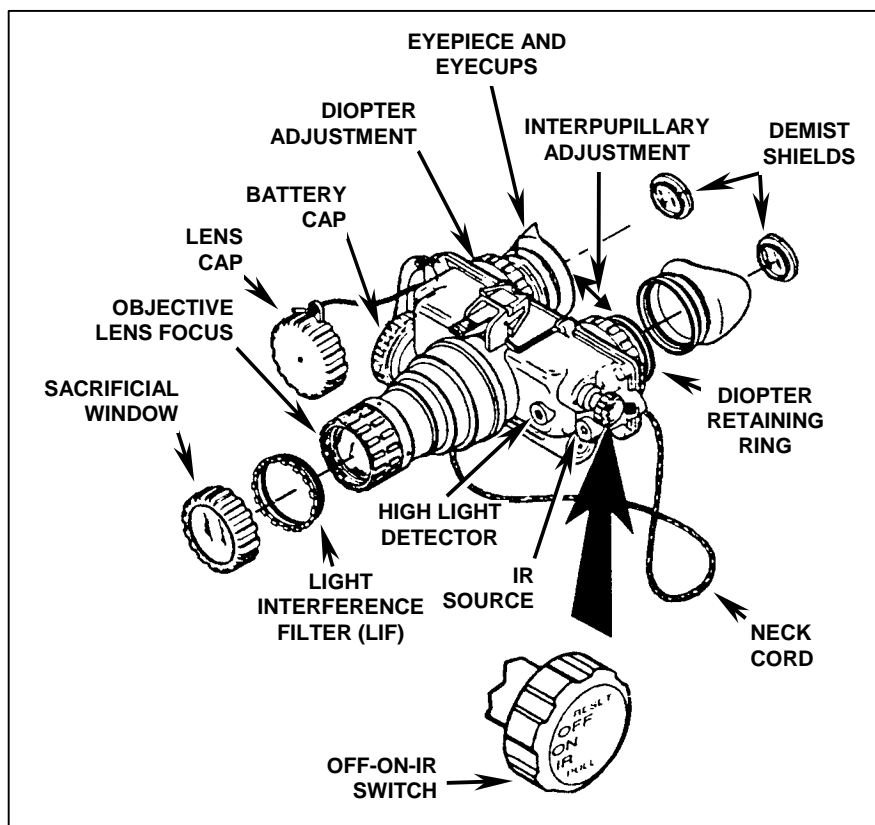


Figure 1. AN/PVS-7B night vision goggles and accessories.

b. Inspect the goggles assembly and components for serviceability.

(1) Ensure that the goggles assembly rotary switch is in the OFF position. Inspect goggles assembly and components for any damage to optical surfaces, body, eyecups, OFF-ON-PULL/IR switch, and battery cap.

(2) Ensure all optical surfaces are clean. Clean with clean water and lens tissue if needed (Figure 2).



**Figure 2. Optical surfaces and other components.**

c. Install batteries.

(1) Check and ensure that the OFF-ON-PULL/IR switch is in the OFF position before installing batteries.

(2) Comply with all warnings and danger statements that apply to handling batteries.



**WARNING**

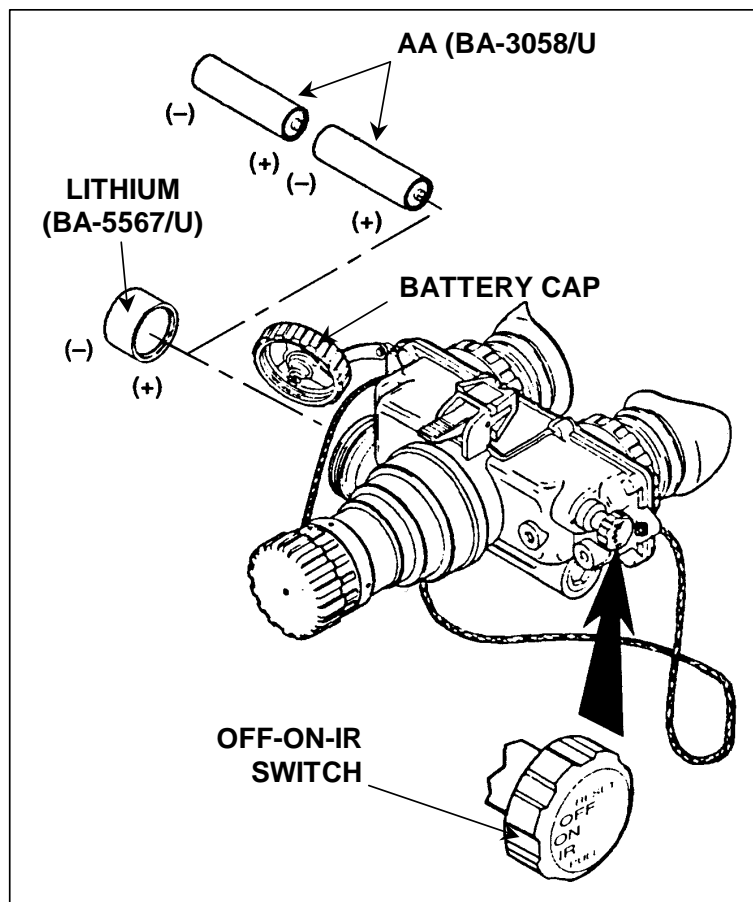
- Batteries (alkaline, lithium, and mercury) present a potential hazard. Do not heat, puncture, disassemble, short-circuit, try to recharge, or otherwise tamper with the batteries.
- If the battery compartment becomes unusually hot, turn off the equipment. Try to wait until the batteries cool before you remove them.
- Batteries have safety vents to prevent explosion. When they vent, you will notice an irritating odor or hear the sound of gas escaping. After batteries vent, they are fairly safe, but you must still handle them with care.

**DANGER**

**IF YOU INHALE SULPHUR DIOXIDE, SEEK MEDICAL ATTENTION.**

(3) Remove the battery cap. Insert two AA batteries (BA-3058/U) or one lithium battery (BA-5567/U) in the battery compartment, positive end (+) first.

(4) Replace the battery cap. Tighten it firmly to ensure a watertight seal ([Figure 3](#)).



**Figure 3. Battery installation.**

d. Perform an operational check.

(1) Position the OFF-ON-PULL/IR switch to ON. Observe that a green glow gradually appears in each eyepiece.

(2) Pull the OFF-ON-PULL/IR switch knob and rotate it clockwise to the IR position. Observe that a red light appears in the left eyepiece. This indicates that the IR source is operating. The IR source is located on the left front of the goggles. Do not block it while operating the goggles.

(3) Turn the OFF-ON-PULL/IR switch counterclockwise to the OFF position. Observe that the red light and green glow disappear.

## 2. Operate goggles.

a. Focusing the goggles. If you normally wear eyeglasses, remove them to operate these goggles. You can focus the goggles, so you will not need your eyeglasses.

(1) Focus on the image intensifier screen using the diopter adjustment rings.

(2) Focus on objects at varying distances using the objective focus adjustment.

b. Handheld operation.

(1) Position the goggles so that the eyecups seal around your eyes to prevent green glow from escaping.

(2) Position the OFF-ON-PULL/IR switch to ON.

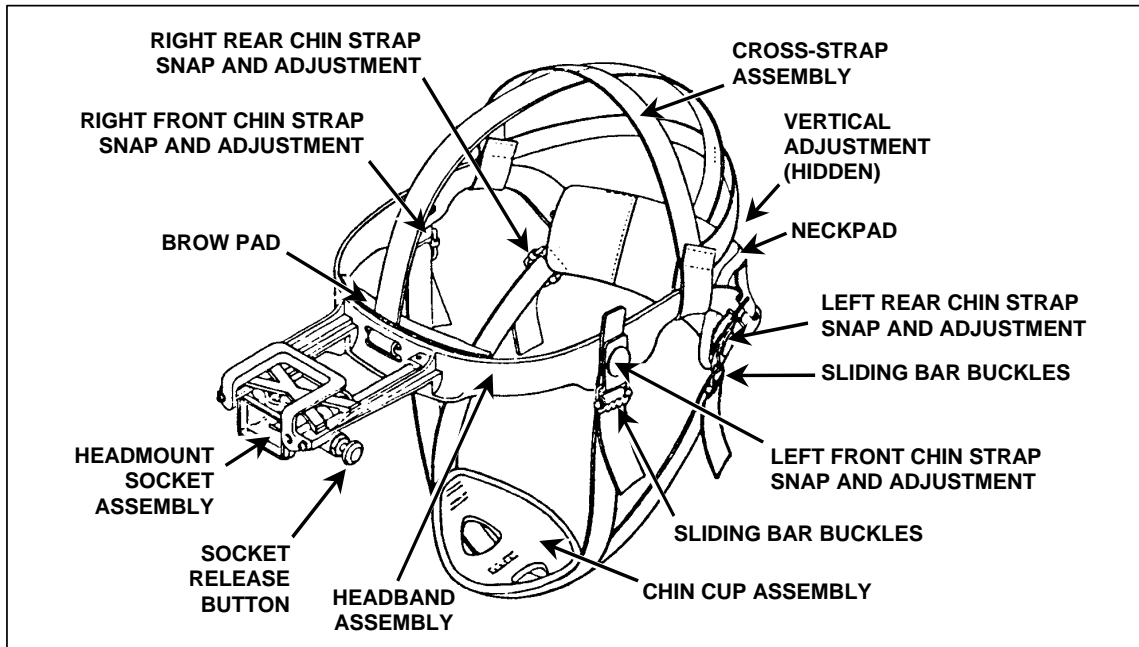
(3) Adjust the interpupillary distance by sliding the eyepieces either together or apart so both eyes can observe the entire field of view at the same time.

(4) To set the diopter adjustment rings, close your left eye and adjust the right diopter ring for the clearest focus on the image intensifier screen. Then, close your right eye and adjust the left diopter ring for the clearest focus on the image intensifier screen.

(5) Adjust objective lens focus while observing a distant object (at least 4 meters distance) until the sharpest view is obtained.

c. Head mount operation.

(1) Adjust the headmount assembly (Figure 4).



**Figure 4. Headmount assembly.**

(a) Loosen the four chin straps on the headmount assembly until the end of each strap is about 2 inches from the sliding bar buckles.

**NOTE:** When installing a headmount assembly over a protective mask, make sure you do not break the seal of the protective mask around your face.

(b) Grasp the neck pad assembly with both hands. Pull it over your head and down to the back of your neck. If the head mount is too loose, replace the thin pad with the medium or thick brow pad. The pads are held in place by hook-pile tape.

(c) Fasten the front and rear snaps in place with your left hand. Hold the chin cup in position on your chin. Adjust both rear chin assembly straps until you feel light pressure against your chin. Stop. Do not tighten the strap any farther.

(d) Continue to hold the chin cup in position. At the same time, remove slack from the front and rear chin straps. Once you have done so--stop. Do not tighten them any farther.

(e) Make sure you the cross-strap assembly does not twist. To remove slack from it, adjust the vertical adjustment strap at the neck pad.

(f) Adjust the chin straps and the vertical adjustment strap until both the chin cup and the headband assembly are in a comfortable but firm position.

(g) Depress the socket release button. Position the headmount socket all the way forward.

(2) Install the goggles on the headmount assembly.

(a) Align the goggles latch with the headmount socket. Press and hold the goggles latch lever while you place the goggles into the headmount socket. Release the latch when the goggles fully engage the socket.

(b) Depress the socket release button. Move the goggles back toward your eyes until the eyecups and eyepieces are comfortably aligned. The eyecups must seal around your eyes and prevent the green glow from escaping.

(3) Adjust goggles for operation.

(a) Position the OFF-ON-PULL/IR switch to ON.

(b) Adjust the interpupillary distance. Slide the eyepieces either together or apart so you can observe the entire FOV with both eyes at the same time.

(c) Set the diopter adjustment rings. Close your left eye and adjusting the right diopter ring for the clearest focus on the image intensifier screen. Close your right eye and adjust the left diopter ring for the clearest focus on the image intensifier screen.

(d) Adjust the eye relief distance. Press the socket release button. Move the goggles backward or forward to obtain a full field of view of the image intensifier. If necessary, readjust the diopter rings to obtain the best image.

(e) Adjust the objective lens focus while observing a distant object (at least 4 meters away) until you obtain the sharpest possible view.

(f) Readjust the vertical strap assembly until the goggles align with your eyes.

(g) If necessary, adjust the kevlar or M1 headband inside the helmet for a proper fit over the headmount assembly.

### 3. Operate goggles under unusual conditions.

a. Extreme darkness.

(1) Pull the OFF-ON-PULL/IR switch out and rotate it clockwise to the IR position.

(2) Ensure the eyecups are positioned to prevent light escaping from the goggles.

#### **WARNING**

**The infrared source is a light that is invisible to the unaided eye for use during conditions of extreme darkness. However, the enemy can detect it with night vision devices. The infrared source is used to see objects within a distance of 3 meters.**

b. Dust and sand. Attach the sacrificial window to protect the objective lens from scratches and other damage.

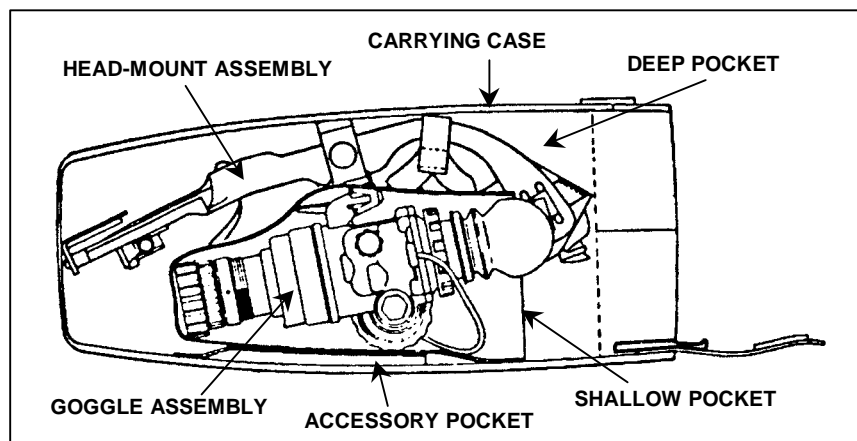
(1) Remove the sacrificial window from the carrying case.

(2) Carefully push the sacrificial window over the objective lens until it stops.

- (3) Turn the sacrificial window clockwise until it snaps in place.
- (4) Remove the sacrificial window by reversing the installation procedures.
- c. Rainy and humid conditions. Install demist shields to minimize diopter fog.
  - (1) Remove the eyecups by carefully pulling them off the diopter ring.
  - (2) Carefully press a demist shield onto each eyepiece. Do not smudge eyepieces or demist shields.
  - (3) Replace eyecups. Press each eyecup over the diopter retainer ring. Rotate it into correct viewing position.
- d. Laser threat environment. Install the light interference filter (LIF). Using this filter will slightly reduce system gain.
  - (1) Remove the container/wrench from the carrying case.
  - (2) Remove the lens cap or sacrificial window from the objective lens of the goggles.
  - (3) Open the container/wrench and remove the LIF.
  - (4) Hold the LIF by the notched end. Thread it clockwise into the end of the objective lens.
  - (5) Use the ridged side of the container/wrench as a wrench. Engage the ridges on the container with the ridges on the LIF. Hand tighten the LIF.
  - (6) Place the empty container/wrench back into the pouch in the carrying case.

**NOTE:** The lens cap and the sacrificial window will fit onto the end of the objective lens with the LIF in place. However, the lens cap and sacrificial window will not snap into place without the LIF attached.

- (7) Replace the lens cap or the sacrificial window onto the end of the objective lens and over the LIF.
  - (8) Remove the LIF by reversing the installation procedures.
  - e. NBC environment.
    - (1) Place the protective mask on your head per instructions provided with the protective mask.
    - (2) Make sure you do not break the seal of the protective mask around your face when you install the headmount assembly over the protective mask.
4. Install and operate the snap-on compass.
- a. Remove the objective lens cover from the goggles. Secure the snap-on compass to the lens with the round part of the activation button facing down.
  - b. Turn the goggles on. Push up on the activation button to determine azimuth direction.
5. Attach the 3X magnifier telescope assembly.
- a. Objective focus cover attached. Push the objective focus cover sleeve onto the goggles' objective focus ring.
  - b. Objective focus cover not attached to goggles. Screw the 3X magnifier directly into the goggles' objective focus ring.
6. Stow the night vision goggles ([Figure 5](#)).



**Figure 5. Goggles stowed in the carrying case.**

- a. Shut down the goggles. Move the OFF-ON-PULL/IR switch to OFF.
- b. Remove the goggles from the head mount (if attached). Depress the latch lever and remove the goggles.
- c. Unscrew the battery cap, remove the battery, and replace the battery cap.
- d. Remove the demist shields and sacrificial window, if installed.
- e. Install the lens cap.
- f. Ensure the goggles are free of dirt, dust, and moisture.
- g. Place the demist shields and the battery into their proper carrying case pockets.

#### **CAUTION**

To prevent damage to window, place the sacrificial window at bottom left or right corner of the carrying case accessory pocket.

- h. Place the lens paper, sacrificial window, and operator's manual in the accessory pocket located under the shallow pocket that contains the goggles.
- i. Place the goggles (objective lens down) into the shallow pocket of the carrying case.
- j. Remove the headmount assembly. Unsnap the front and rear straps. Lift the headmount assembly up and off your head. Stow the assembly in the deep pocket of the carrying case. Close the carrying case.

### **EVALUATION PREPARATION**

*Setup:* Evaluate this task in a classroom where light can be controlled to simulate nighttime. Provide the soldier with a set of night vision goggles AN/PVS-7B, components, and batteries, as described in the task conditions statement.

1. Have the soldier prepare the goggles for operation, operate the goggles using the headmount assembly, shut down the goggles, and stow the goggles.
2. Evaluate the soldier's ability to select and attach the appropriate components by telling him to prepare the goggles for operation in the following conditions: dust and sand, rain or high humidity, or laser threat environment. If a snap-on compass and 3X magnifier are available, evaluate the soldier's ability to attach them to the goggles.

*Brief soldier:* Tell the soldier that he is to prepare the goggles for operation, operate the goggles using the headmount assembly, shut down and stow the goggles, and attach components to operate the goggles in various conditions as instructed. Tell him that he must notify you before turning the goggles ON and after turning them OFF, so you can darken or lighten the room. Tell the soldier not to energize the goggles when the room lights are on.

## EVALUATION GUIDE

Performance Measures	Results	
1. Prepare goggles for operation.	P	F
a. Inventory carrying case content to ensure all accessories are present.		
b. Inspect the goggles assembly and components for serviceability.		
c. Install batteries correctly.		
d. Perform an operational check.		
2. Operate goggles in hand-held mode.	P	F
3. Operate goggles with head mount.	P	F
a. Adjust the headmount assembly for proper fit.		
b. Install goggles correctly on the headmount assembly.		
c. Adjust goggles for operation.		
4. Operate goggles during unusual conditions.	P	F
a. Extreme darkness. Operate goggles using IR source.		
b. Dust and sand. Attach the sacrificial window.		
c. Rainy and humid conditions. Install demist shields to minimize diopter fog.		
d. Laser threat environment. Install the light interference filter (LIF).		
e. NBC environment.		
(1) Place the protective mask on your head IAW instructions provided with the protective mask.		

## EVALUATION GUIDE

### Performance Measures

### Results

(2) Do not break the seal of the protective mask around your face when you install the headmount assembly over the protective mask.

- |   |   |   |
|---|---|---|
| 5. Install and operate snap-on compass (if available).    | P | F |
| 6. Attach 3X magnifier telescope assembly (if available). | P | F |
| 7. Stow the night vision goggles.                         | P | F |

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

TM 11-5855-262-10-2

### Related

None



## **OPERATE NIGHT VISION SIGHT AN/PVS-4 071-315-0003**

### **CONDITIONS**

At night, given an AN/PVS-4 sight in its carrying case and BA-1567/U batteries.

### **STANDARDS**

Prepare and correctly place the AN/PVS-4 sight into operation, then shut it down and store it.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Unpack the sight.

#### **CAUTION**

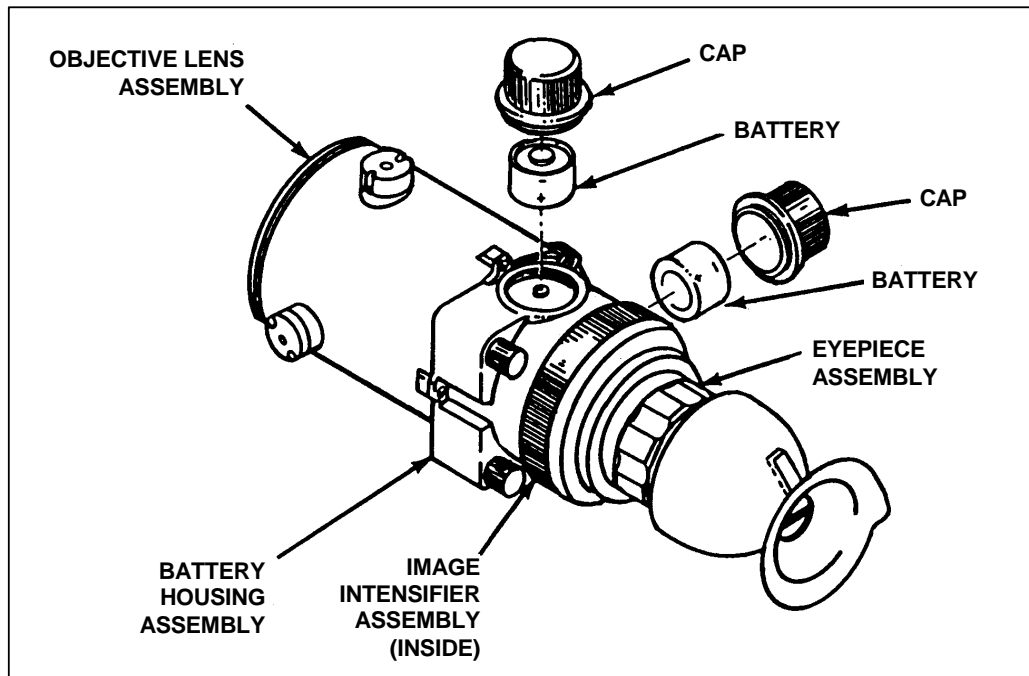
To relieve air pressure inside the carrying case, press the core of the relief valve, located near the handle, before releasing the latches.

- a. Release the four latches securing the top of the carrying case and remove the top.
- b. Remove the carrying bag from the carrying case. Open the bag and remove the sight.
- c. Inspect the sight for damage (cracks, chips, abrasions) and ensure that the decals are readable. Report deficiencies.

#### **CAUTION**

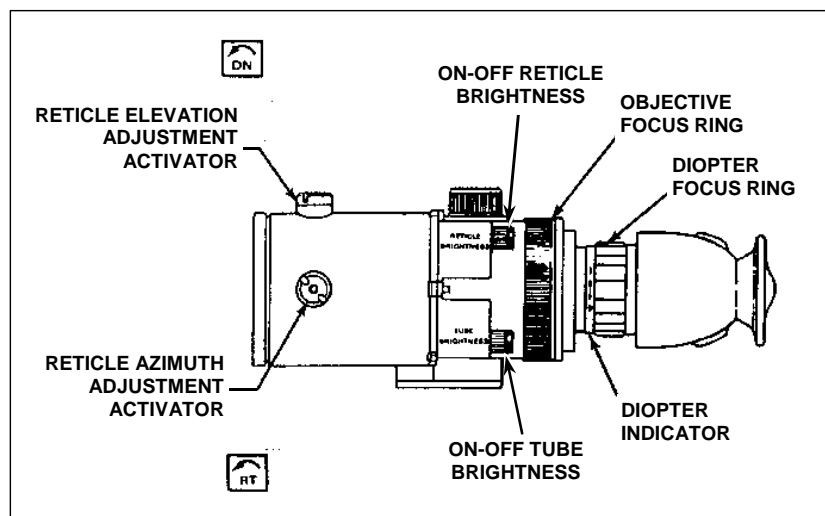
AN/PVS-4 sights are precision electro-optical instruments. They must always be handled carefully. Be sure to turn the ON-OFF/TUBE BRIGHTNESS and ON-OFF/RETICLE BRIGHTNESS switches OFF before installing batteries.

2. Install the batteries ([Figure 1](#)).



**Figure 1. Battery emplacement.**

- a. Remove the battery caps by turning them counterclockwise.
  - b. Insert a battery in each cap with the negative (-) terminal (raised end) facing into the cap.
  - c. Replace the battery caps and tighten them snugly.
3. Operate the device under normal conditions ([Figure 2](#)).



**Figure 2. Controls and indicators.**

**WARNING**

Using the sight without the eye guard installed may cause detection by the enemy and, when operated on a weapon, can result in physical injury to the operator because of weapon recoil.

- NOTES:**
1. The daylight cover must be installed during the daylight and removed at night.
  2. Batteries must be removed when the sight is not in use, to prevent accidentally turning on the sight.

- a. Press the eye against the eye guard to open the rubber leaves that prevent the emission of stray light.
- b. Turn the ON-OFF/TUBE BRIGHTNESS control clockwise to turn on the sight.

**NOTE:** If the equipment fails to operate, refer to the troubleshooting procedures in TM 11-5855-213-10.

- c. Adjust the ON-OFF/TUBE BRIGHTNESS control to the lowest setting that provides good target-to-background contrast.
- d. Turn the ON-OFF/RETICLE BRIGHTNESS control clockwise to turn on the light-emitting diode. Adjust the light intensity so that the reticle is just visible against the background.

**CAUTION**

Excessive reticle brightness may damage the image-intensifier tube.

- e. Turn the diopter focus ring ([Figure 2](#)) to obtain the clearest image of the reticle pattern.
- f. Turn the objective focus ring ([Figure 2](#)) until the target in the field of view is sharply defined.

**NOTE:** During surveillance or target engagement, the operator must adjust the objective focus to ensure a sharp image at different ranges.

4. Perform after-operation procedures.
  - a. Turn the reticle and tube brightness controls fully counterclockwise.
  - b. Remove both batteries.
  - c. Replace the sight in the carrying case.

## EVALUATION PREPARATION

*Setup:* At the test site, provide all the materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier to remove the AN/PVS-4 sight from its carrying case and place them into operation. Tell him to take the AN/PVS-4 sight out of operation and replace it in its carrying case.

## EVALUATION GUIDE

### Performance Measures

### Results

**NOTE:** Steps 1 and 2 are to be executed in sequence.

- |   |   |   |
|---|---|---|
| 1. Remove sight from the carrying case.   | P | F |
| a. Release the air pressure.  |   |   |
| b. Release the latches.   |   |   |
| c. Inspect the sight for damages.   |   |   |
| 2. Install the batteries.   | P | F |
| a. Place the ON-OFF/TUBE BRIGHTNESS switch to OFF.  |   |   |
| b. Place the ON-OFF/RETICLE BRIGHTNESS switch to OFF.                                     |   |   |
| c. Remove the battery caps (two each).  |   |   |
| d. Insert the batteries (two each) correctly (negative [-] terminal facing into the cap). |   |   |
| e. Replace caps (two each).   |   |   |
| 3. Turn the ON-OFF/tube brightness control to ON.   | P | F |
| 4. Turn the ON-OFF/reticle brightness control to ON.                                      | P | F |
| 5. Perform after-operation procedures.  | P | F |
| a. Turn the ON-OFF/tube brightness control to OFF.  |   |   |
| b. Turn the ON-OFF/reticle brightness control to OFF.                                     |   |   |
| c. Remove both batteries.   |   |   |
| d. Replace the sight in the carrying case.  |   |   |

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

### Required

None

### Related

TM 11-5855-213-10

## **OPERATE NIGHT VISION GOGGLES AN/PVS-5 071-315-0030**

### **CONDITIONS**

At night, given serviceable AN/PVS-5 night vision goggles with components, accessories, and batteries.

### **STANDARDS**

While using the AN/PVS-5 night vision goggles during performance of assigned mission, comply with all appropriate warnings and cautions. Inspect and operate the goggles to obtain the best possible image. Properly shut down the goggles. Stow them with their accessories in the carrying case.

### **TRAINING AND EVALUATION** **Training Information Outline**

#### **WARNING**

**To avoid injuring yourself or damaging the goggles, remember the following equipment limitations and safety precautions while using them:**

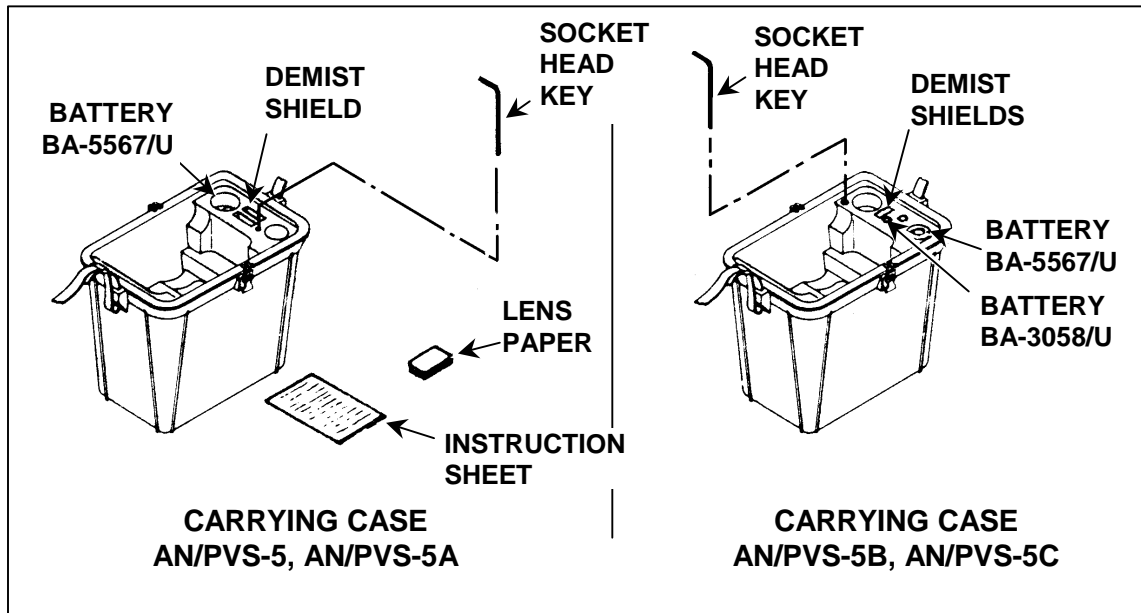
- **You must have some light (moonlight or starlight) to operate the goggles.**
- **You will have less light when operating under trees, in building shadows, under passing cloud cover, and so on.**
- **If you try to view into shadows and other darkened areas, the equipment will be less effective.**
- **The equipment does not operate through rain, fog, sleet, snow, or smoke.**
- **When conditions exist that may or do reduce your vision, adjust the speed of the vehicle to avoid overdriving your range of view.**
- **If the moon is between its last and first quarters, if the operation requires use of protective masks, or both, equip the assistant driver with a night vision device.**

1. Check the carrying case for correct contents.

**CAUTION**

Handle all optical components with extreme care, and protect them against dirt, dust, fingerprints, and excessive moisture.

- a. Remove the goggles assembly from the carrying case. Place the neck cord around your neck.
- b. Inventory the carrying case to make sure the items it contains are correct for the model you are using (Figure 1).



**Figure 1. Carrying case items.**

2. Install the batteries. Figure 2, Figure 3, and Figure 4 show the locations of the battery compartment and controls for the model you are using, as well as the type of battery you will need.

**WARNINGS****BA-5567/U LITHIUM BATTERY**

**BA-5567/U lithium batteries contain sulfur dioxide gas under pressure.**

**DO NOT heat, puncture, disassemble, short-circuit, try to recharge, or otherwise tamper with the batteries.**

**Turn off the goggles if the battery compartment gets abnormally hot. If you can, wait until the batteries have cooled before you remove them from the goggles.**

**Batteries have safety vents to prevent explosion. While they are venting, you will notice the irritating smell of sulfur dioxide, hear gas escaping, or both. After the safety vents have purged excess gas, the batteries are fairly safe from bursting, but you must still handle them with care.**

**If you inhale sulfur dioxide, seek medical attention.**

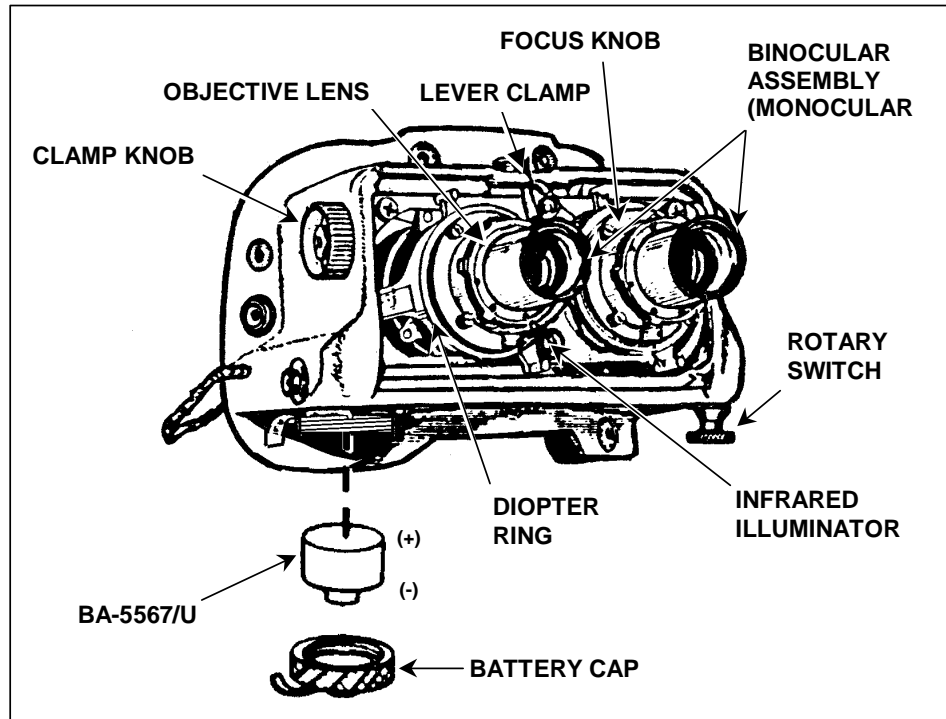
**BA-3058/U ALKALINE BATTERY**

- **Do not heat or dispose of alkaline battery BA-3058/U in fire.**
- **Do not short-circuit or otherwise tamper with the battery.**
- **Return batteries to the property disposal officer.**

a. Check and make certain that the rotary switch is in the OFF position before installing batteries.

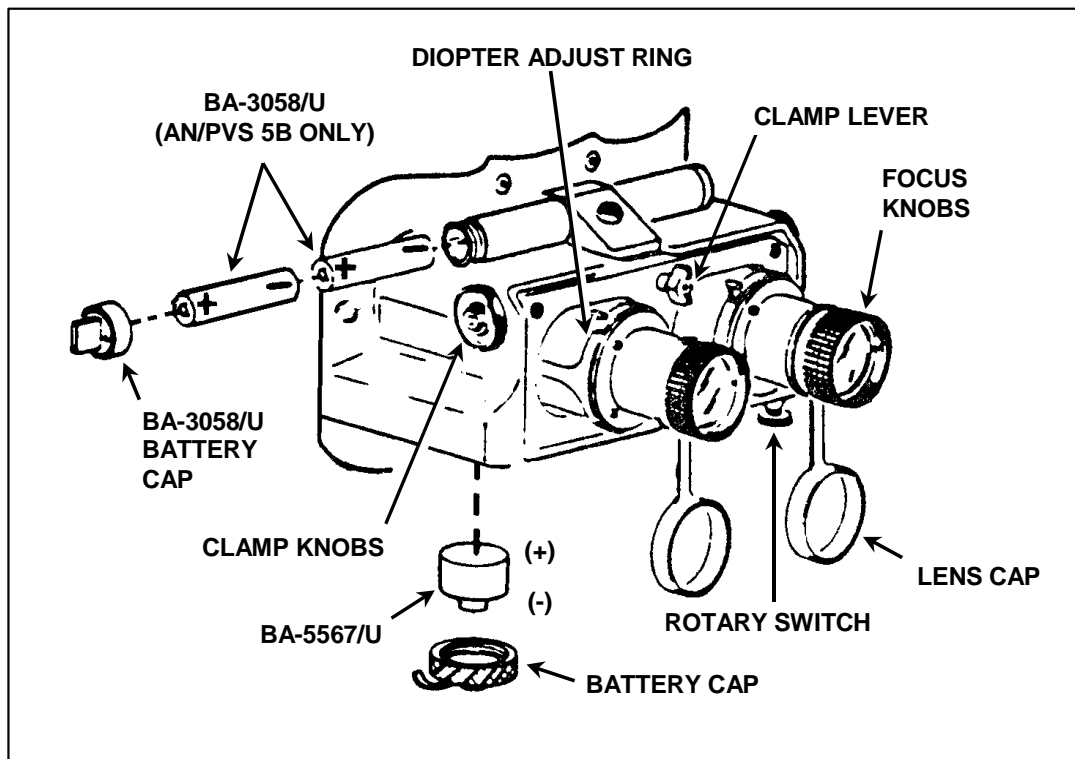
b. AN/PVS-5 and AN/PVS-5A ([Figure 2](#)). Remove the battery cap and insert one lithium battery (BA-5567/U) in the battery compartment with the positive (+) end first. Replace the battery cap and tighten it firmly to ensure a watertight seal.





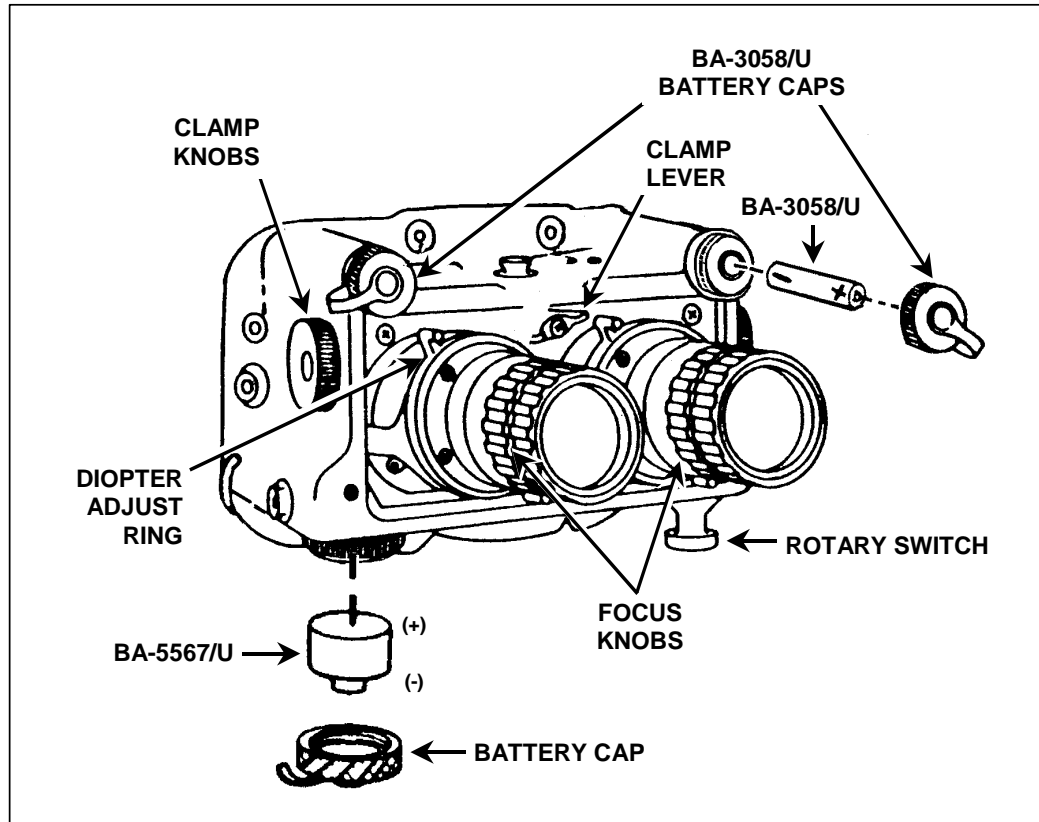
**Figure 2. AN/PVS-5 and AN/PVS-5A goggles.**

c. AN/PVS-5B ([Figure 3](#)). The AN/PVS-5B uses either one lithium battery or two alkaline batteries. Use only one type battery at a time. Remove the battery cap and insert two alkaline batteries (BA-3058/U) in the battery compartment with the negative (-) end first, or insert one lithium battery (BA-5567/U) in the battery compartment with the positive end (+) first. Replace the battery cap and tighten it firmly to ensure a watertight seal.



**Figure 3. AN/PVS-5B goggles.**

d. AN/PVS-5C ([Figure 4](#)). The AN/PVS-5C uses either one lithium battery or two alkaline batteries (in separate compartments). Use only one type battery at a time. Remove the battery caps and insert one alkaline battery (BA-3058/U) in each battery compartment with the negative (-) end first, or insert one lithium battery (BA-5567/U) in the battery compartment with the positive (+) end first. Replace the battery cap(s) and tighten it firmly to ensure a watertight seal.



**Figure 4. AN/PVS-5C goggles.**

3. Operate the goggles under normal conditions.

**NOTE:** You do not need eyeglasses to use these goggles. In fact, wearing eyeglasses with these goggles would prevent you from being able to seal them against your face, and light would leak out. So, remove your eyeglasses now. Make the following adjustments separately:

- Adjust the diopter rings to focus on the image intensifier screen.
- Adjust the objective lens to sharpen objects at varying distances.

a. Adjust the head strap.

(1) Attach the head strap to the goggles, making sure all straps are extended to their maximum length.

(2) Place the goggles on your head. Adjust the straps for a proper fit.

(a) Bend your head down.

(b) Place the head strap on your head.

(c) Grasp the head strap's horizontal (side) adjustment bands with both hands.

(d) Slowly pull the side adjustment bands until the cushion of the face mask just touches your face.

(e) Continue pulling straight back on the straps until the goggles feel snug.

(f) With your head still bent, grasp the center adjustment band and pull until it feels snug.

(3) Lift your head to a normal viewing position. Adjust all bands until the goggles feel comfortable and stable.

b. Adjust the goggles for distant viewing.

(1) Turn the rotary switch to the ON position.

(2) Turn the focus knobs fully counterclockwise.

(3) Select a viewing area at a distance of at least 100 feet (33 meters).

(4) Close your left eye; adjust the right diopter ring until the viewing area becomes as clear as possible. Then, adjust the right focus knob to obtain the clearest image you can.

(5) Close your right eye; adjust the left diopter ring until the viewing area becomes as clear as possible. Then, adjust the left focus knob to obtain the clearest image you can.

**NOTE:** You have properly aligned the eyepiece lens when the distance between your pupils and the line of sight equals the vertical angle of the monocular. When you have adjusted everything (eye span, vertical, and tilt) properly, the edges of the images in both monoculars will appear clear.

(6) Adjust interpupillary distance. Loosen the lever clamp. Slide the eyepieces either together or apart until you attain a correct sight picture. The correct sight picture has one circular image with a slight overlap. Hand tighten the lever clamp.

(7) Adjust eye relief distance. Loosen both clamp knobs, and pull the goggles backward or forward to obtain the image intensifier's full field of view. Start by placing the monoculars as close to your eyes as possible, then move them outward. The correct position is a matter of your individual preference. Hand tighten the clamp knob.

(8) Readjust the focus if necessary.

(9) Have someone check carefully for any light that may be leaking from the edges of the face mask.

(10) Check that passing your hand directly in front of goggles has not turned on the IR illuminator. If contrast appears extra bright, turn rotary switch to ON position.

c. Adjust the goggles for reading. Turn the focus knobs fully clockwise to obtain sharp focus on a viewing area at a distance of about 10 inches.

d. Repeat Steps 2b(2) through 2b(5).

4. Operate goggles under unusual conditions.

### **WARNING**

**The IR source is invisible to the unaided eye for use during conditions of extreme darkness. However, the enemy can detect infrared light using night vision devices. Therefore, use the IR source only for viewing at close distances (up to no more than 3 meters).**

- a. Extreme darkness.
    - (1) Pull down and turn the rotary switch to the IR setting. Do not pull down on the AN/PVS-5 rotary switch. Observe that the area to your immediate front is lighted. As the IR illuminator is turned on, you will see a momentary flash. This is normal.
    - (2) Seat the face cushion so that no light escapes from the goggles.
  - b. Rainy and humid conditions. Install the de-mist shields to reduce diopter fog.
    - (1) Carefully press the de-mist shield onto each eyepiece.
    - (2) Do not smudge the eyepieces or de-mist shields.
5. Shut down and stow the goggles and accessories.
- a. Turn off the goggles by positioning the rotary switch to OFF.
  - b. Remove goggles from your head.
  - c. Remove the head strap.
  - d. Remove the de-mist shields, if installed.
  - e. Replace the objective lens caps and eyepiece caps.
  - f. Remove the battery (or batteries), and replace the battery cap.

**CAUTION**

Make sure you loosen the clamp, knobs, and lever clamp before stowing the goggles. Failure to do so could result in damage to face mask.

- g. Make the sure goggles are free of dirt, dust, and moisture.
- h. Place the goggles, batteries, and accessories in the carrying case. Secure the case latch.

**EVALUATION PREPARATION**

*Setup:* Evaluate this task at night or in a classroom where you can control the light to simulate nighttime conditions. Provide the soldier with a set of AN/PVS-5 night vision goggles, complete with components and fresh batteries.

*Brief Soldier:* Tell the soldier to prepare the goggles for operation, attach the components, operate the goggles, and shut down and stow the goggles under the following conditions: normal operation, extreme darkness, and rain or high humidity. Tell the soldier that he must notify you before turning the goggles ON and after turning them OFF, so you can darken or lighten the room accordingly. Tell him not to energize the goggles when the room lights are on.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Check carrying case for correct contents.	P	F
2. Install batteries correctly.	P	F
3. Operate goggles under normal conditions. a. Adjust head strap. b. Adjust goggles for distant viewing. c. Adjust goggles for reading.	P	F
4. Operate goggles during unusual conditions. a. Extreme darkness. Operate goggles using infrared source. b. Rainy and humid conditions. Install de-mist shields to minimize diopter fog.	P	F
5. Shut down and stow goggles and accessories.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
TM 11-5855-238-10	None

## OPERATE A THERMAL VIEWER AN/PAS-7 071-315-0091

### CONDITIONS

During limited visibility, given an AN/PAS-7 and a sector to scan.

### STANDARDS

Before using the goggles, properly install the batteries and focus the goggles. After using the goggles, remove the batteries, cover the lenses with the lens caps, and properly stow the goggles in their carrying case.

### TRAINING AND EVALUATION Training Information Outline

1. Adjust the neck sling for the AN/PAS-7. To adjust—
  - a. Put the neck sling around the neck.
  - b. Adjust it to a comfortable position on the chest.
2. Connect the interconnecting cable to the battery and viewer. To do so—
  - a. Connect the female end of the cable to the viewer.
  - b. Connect the male end of the cable to the battery ([Figure 1](#)).

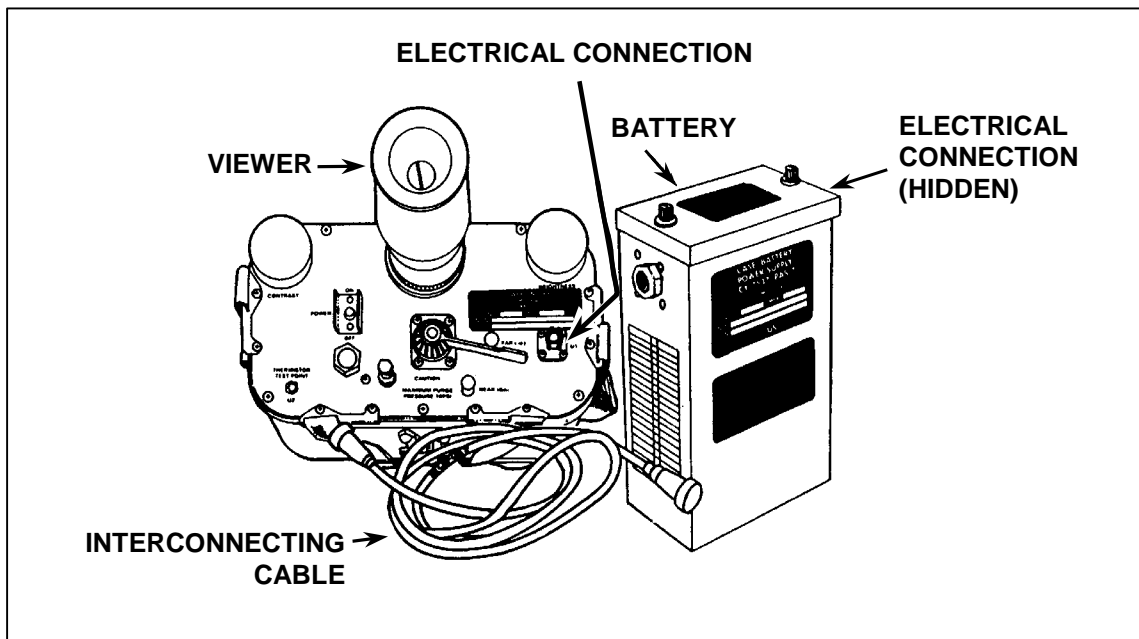
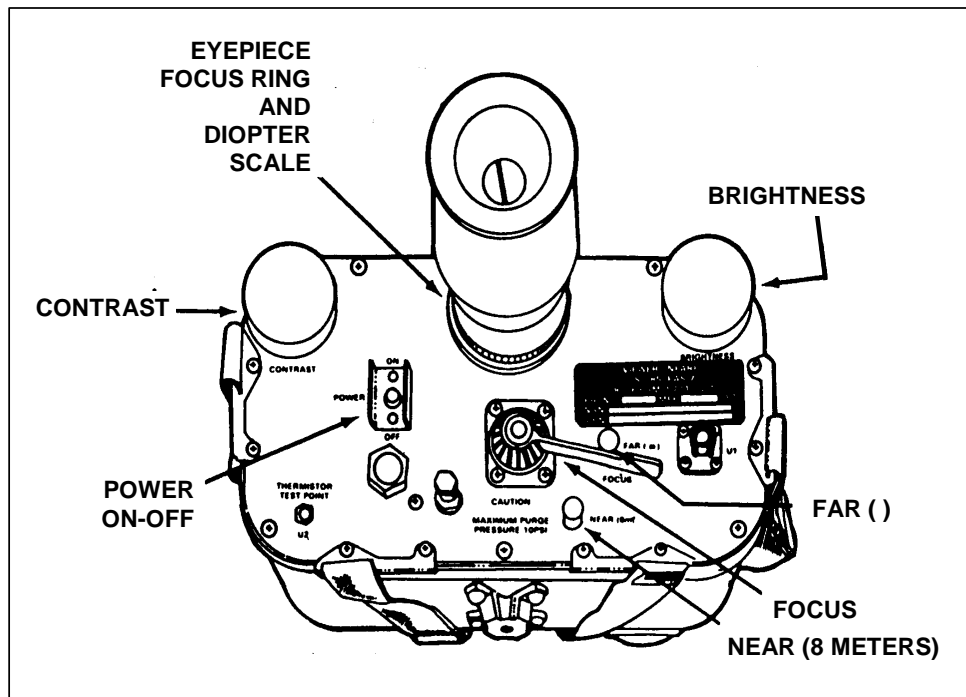


Figure 1. AN/PAS-7 and battery.

**CAUTION**

Before turning the power switch to the on position, be sure that the brightness control is fully counterclockwise.

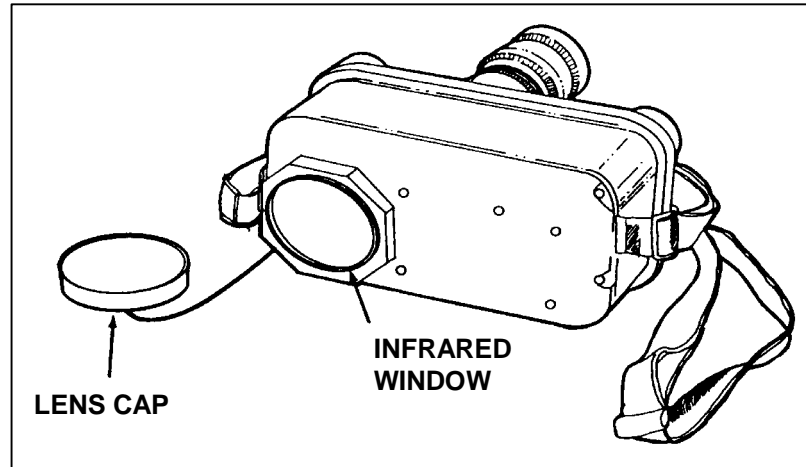
3. Place the power switch in the ON position (Figure 2). (A faint ticking of the oscillating mirror can be heard.) Wait about 30 seconds after turn-on for the CRT (cathode ray tube) heater to warm up.



**Figure 2. AN/PAS-7 controls.**

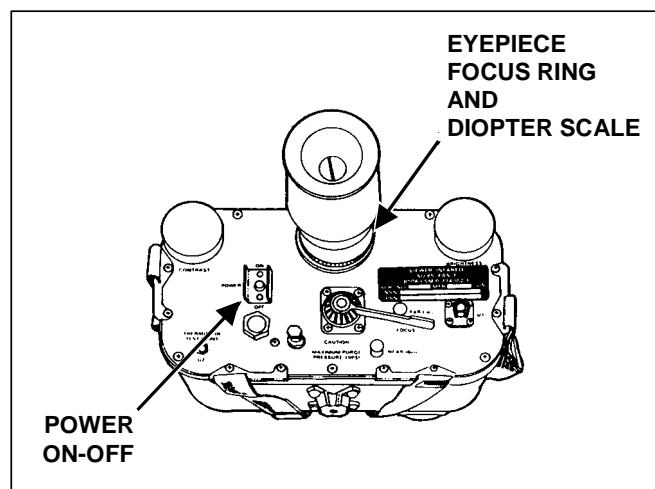
4. Remove the lens cap from the infrared window (Figure 3).





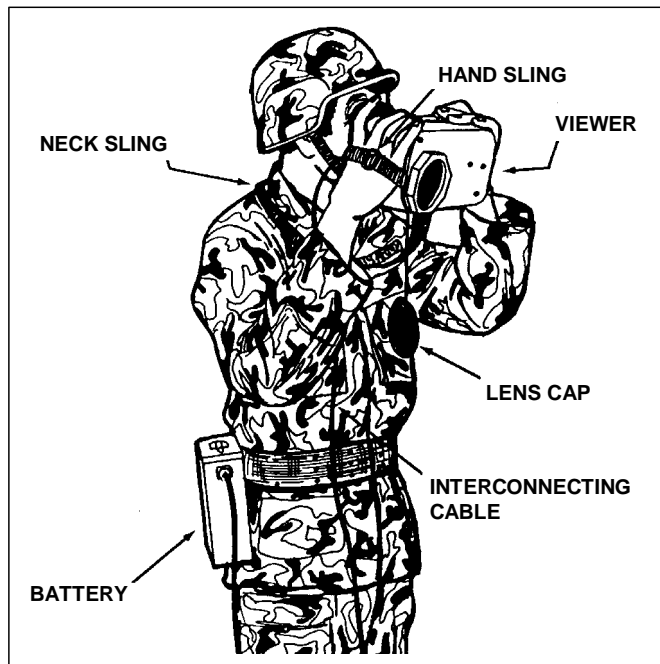
**Figure 3. Cap and IR window.**

5. Prepare the focus.
  - a. Adjust the hand slings for a comfortable fit.
  - b. Hold the viewer in the palms of the hands so that the right thumb can move the tip of the focus lever and the right forefinger can rotate the brightness control. The left forefinger can rotate the contrast control.
  - c. Select a known, warm target—a person at 10 to 20 feet is best.
  - d. Raise the viewer to the eye and press firmly against the rubber eye shield to open the shutter.
  - e. Adjust the brightness control with the right forefinger until the background scene is just visible.
  - f. Adjust the eyepiece focus.
    - (1) Rotate the eyepiece focus ring until the cross hairs are in the best focus ([Figure 4](#)).
    - (2) Once adjusted, no further adjustment should be necessary during the operation.



**Figure 4. Eyepiece focus ring.**

g. Adjust the contrast control with the left forefinger until the desired contrast is obtained (Figure 5).



**Figure 5. Contrast control.**

h. Adjust the focus lever with the right thumb for the best image (Figure 6).

**NOTE:** Improper focusing can cause a poor image such as those shown in Figure 6. However, if the viewer is focused properly, the target presents a good display.

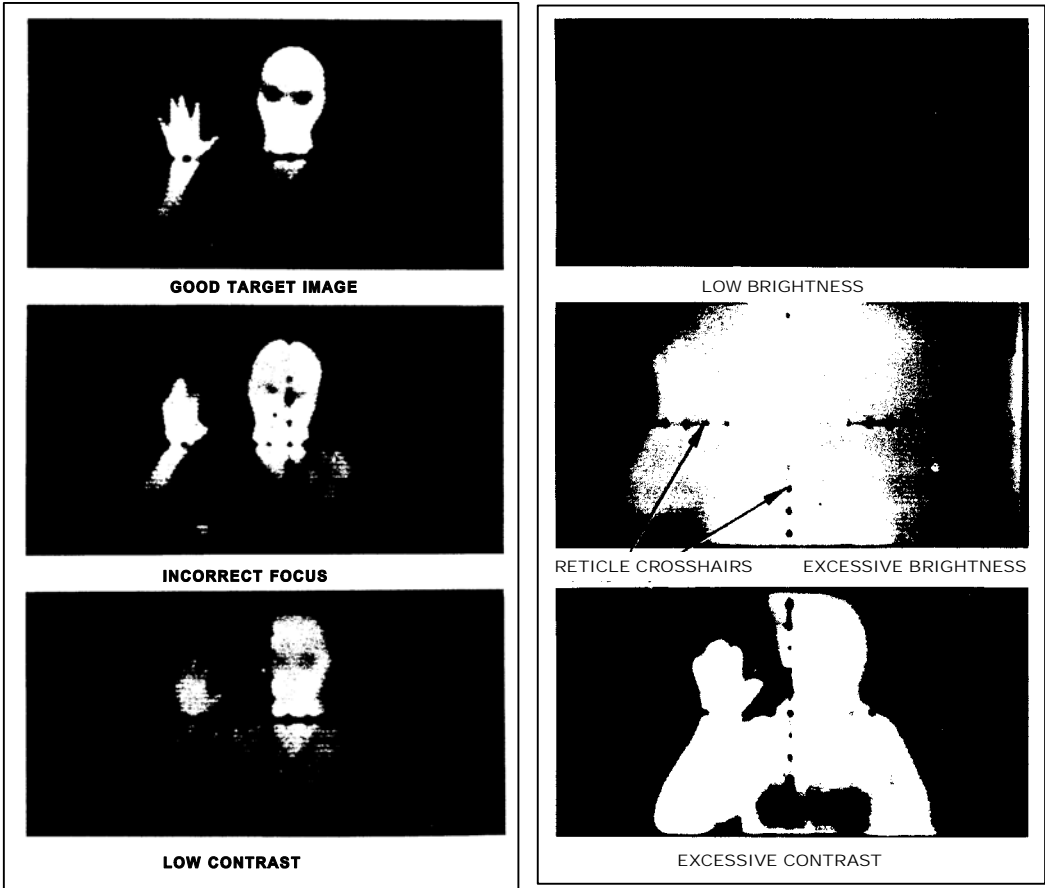


Figure 6. Focusing displays.

EVALUATION PREPARATION

*Setup:* At the test site, provide all the equipment given in the task conditions statement. If testing more than one soldier, use two sectors with different targets. For safety, ensure the brightness control is turned fully counterclockwise before testing.

*Brief Soldier:* Tell the soldier his left and right limits and that testing ends when the target has been correctly identified.

EVALUATION GUIDE

Performance Measures	Results	
1. Adjust the neck sling.	P	F
2. Connect the interconnecting cable.	P	F

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
3. Turn the brightness control fully counterclockwise.	P	F
4. Place the power switch to ON and wait 30 seconds.	P	F
5. Remove the cap from the infrared window.	P	F
6. Adjust the hand slings.	P	F
7. Hold the viewer.	P	F
8. Rotate the eyepiece focus ring until the cross hairs are focused.	P	F
9. Adjust the focus lever.	P	F
10. Adjust the brightness and contrast control.	P	F
11. Identify the target.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

None

**Related**

TM 11-5855-246-10

# **OPSEC AND COMSEC**

## **IDENTIFY COMBAT VEHICLES**

### **071-730-0012**

#### **CONDITIONS**

Given a classroom with a 35-mm slide projector and screen, forty 35-mm slides of combat vehicles as described in FM 23-34, Appendix I, a 12-second exposure time for each slide, a stopwatch, paper, and a pen or pencil.

#### **STANDARDS**

Identify thirty-six of forty vehicles by nomenclature as described in FM 23-34, Appendix I.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

1. Four areas of characteristics are used to identify vehicles. Most tanks have all four areas of characteristics, though not all vehicles do.

a. Track and suspension system. Many tanks can be recognized by their track and suspension systems. However, recognizing a vehicle by this feature alone is often difficult. The tracks are often obscured by grass, dirt, terrain, dust, or other factors. To identify the track and suspension system, check to see whether it has support or return rollers. Few threat vehicles, except the T-10, T-64, T-72, BMD, BMP, SP-122, and SP-152, have either.

(1) Characteristics of most threat vehicles include—

- Flat (Christie) suspension system.
- No support or return rollers.
- No torsion bars.
- Unevenly spaced road wheels.

(2) Characteristics of most NATO vehicles include—

- Suspended track.
- Support or return rollers.
- Torsion bars.
- Evenly spaced road wheels.
- Shock absorbers.

b. Turret. Most turrets can be grouped into three categories:

- Older model, big, bulky turrets.
- New model well-sloped turrets.
- New model streamlined turrets.

c. Main gun. Armament varies from machine guns to large cannons. In turreted vehicles, the heaviest armament is normally in the turret. Look for the main gun, the main gun bore evacuator, and its relative location on the main gun.

(1) Types of main guns are as follows:

- Smooth main gun—no bore evacuator or blast deflector.
- Main gun with bore evacuator.
- Main gun with bore evacuator and muzzle brake or blast deflector.

(2) Types of muzzle brakes.

- Single baffle.
- Double baffle.
- Multi-baffle.

d. Cupolas. The cupola is a small, turret-like projection normally on top of the turret. Cupolas usually mount a machine gun.

2. The forty combat vehicles tested in this task include—

a. Tanks (14 of these).

- AMX 13
- Challenger
- Chieftain
- JP Khanon
- Leopard 2
- M1 Abrams
- M60A3
- Merkava
- T-54/55
- T-62
- T-64
- T-72
- T-80
- Le Clerc

b. Light armor APC/IFV/Reconnaissance (21 of these).

- AMX VCI
- BMD 2
- BMP 1
- BMP 2
- BRDM 1
- BRDM 2
- BTR 50PK
- BTR 60PB
- BTR 70
- FV 432
- Jaguar
- KM 900
- LTVP7 (AAV7A1)
- Luchs (Lynx)
- M113A1

- M2/M3 Bradley
  - Marder
  - Scimitar
  - Scorpion
  - VAB
  - Warrior
- c. Antitank Systems (1 of these).
- M901 (ITV)
- d. Antiaircraft (2 of these).
- Gepard
  - ZSU 23-4
- e. Miscellaneous (2 of these).
- LAV 25 (wheeled reconnaissance)
  - M88 (mechanized recovery vehicle)

### EVALUATION PREPARATION

*Setup:* At the test site, provide the soldier(s) with all equipment and materials as stated in the conditions statement. Before evaluating the soldier(s), check the 35-mm projector to ensure that it is operational. Also, check to ensure that a spare bulb is readily available. Check the TEST SLIDES to ensure they are in the correct order (the same order as the answer key) and correct view (not turned around or upside down).

- After evaluating each soldier(s), verify that the slides remain in the same order as the answer key. This ensures accuracy in the event the equipment malfunctions, such as if it skips a slide.
- Allow student(s) twenty-two seconds for each performance measure: twelve seconds to view the slide and ten seconds to mark his answer. Have student(s) mark his answers in his *Identify Combat Vehicles* handout.

*Brief Soldier:* Read the following instructions to the soldier(s):

*“At this time, you will be evaluated on your ability to identify combat vehicles. You must identify thirty-six of forty vehicles by nomenclature. You will have twelve seconds to view each slide and ten seconds between each slide to write your answer. Be sure you do not get out of sequence, or your answers will be incorrect. When I say START, you will have twenty-two seconds to complete each task.”*

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Identify vehicle slide number 1.	P	F
2. Identify vehicle slide number 2.	P	F
3. Identify vehicle slide number 3.	P	F
4. Identify vehicle slide number 4.	P	F
5. Identify vehicle slide number 5.	P	F
6. Identify vehicle slide number 6.	P	F
7. Identify vehicle slide number 7.	P	F
8. Identify vehicle slide number 8.	P	F
9. Identify vehicle slide number 9.	P	F
10. Identify vehicle slide number 10.	P	F
11. Identify vehicle slide number 11.	P	F
12. Identify vehicle slide number 12.	P	F
13. Identify vehicle slide number 13.	P	F
14. Identify vehicle slide number 14.	P	F
15. Identify vehicle slide number 15.	P	F
16. Identify vehicle slide number 16.	P	F
17. Identify vehicle slide number 17.	P	F
18. Identify vehicle slide number 18.	P	F
19. Identify vehicle slide number 19.	P	F
20. Identify vehicle slide number 20.	P	F
21. Identify vehicle slide number 21.	P	F



## EVALUATION GUIDE

Performance Measures	Results	
22. Identify vehicle slide number 22.	P	F
23. Identify vehicle slide number 23.	P	F
24. Identify vehicle slide number 24.	P	F
25. Identify vehicle slide number 25.	P	F
26. Identify vehicle slide number 26.	P	F
27. Identify vehicle slide number 27.	P	F
28. Identify vehicle slide number 28.	P	F
29. Identify vehicle slide number 29.	P	F
30. Identify vehicle slide number 30.	P	F
31. Identify vehicle slide number 31.	P	F
32. Identify vehicle slide number 32.	P	F
33. Identify vehicle slide number 33.	P	F
34. Identify vehicle slide number 34.	P	F
35. Identify vehicle slide number 35.	P	F
36. Identify vehicle slide number 36.	P	F
37. Identify vehicle slide number 37.	P	F
38. Identify vehicle slide number 38.	P	F
39. Identify vehicle slide number 39.	P	F
40. Identify vehicle slide number 40.	P	F

### FEEDBACK

1. Score the soldier's answer sheet and use it for his individual critique. Transfer his score onto the student evaluation handout.
2. Circle the P (Pass) beside each performance measure the soldier identified correctly. Circle the F (Fail) beside each performance measure the soldier identified incorrectly. For subsequent (second and third) tests, circle only the F (Fail) beside each performance measure that the soldier identified incorrectly. For any F (Failed) performance measures, write the nomenclature of the vehicle incorrectly identified in the space provided.
3. Score the soldier an overall GO if he passed at least thirty-six performance measures. Circle the GO under the appropriate first, second, or third test. Place your initials under the score.
4. Score the soldier an overall NO-GO if he failed more than five performance measures. Circle the NO-GO under the appropriate first, second, or third test. Place your initials under the score.
5. If the soldier failed any performance measures, show him the vehicle incorrectly identified and explain how to identify it correctly.
6. If the soldier received a NO-GO, he will be provided with retraining and practice on the vehicles that he failed. Upon completion of the soldier's retraining, that instructor will place his (the instructor's) initials under the appropriate first or second retrain/practice.

### REFERENCES

#### Required

FM 23-34  
FM 71-1  
GTA 17-2-11  
GTA 17-2-13

#### Related

None

## IDENTIFY WEAPONS

### 071-730-0013

#### CONDITIONS

Given models or photographs of weapons or actual weapons.

#### STANDARDS

Identify each weapon by nomenclature.

#### TRAINING AND EVALUATION

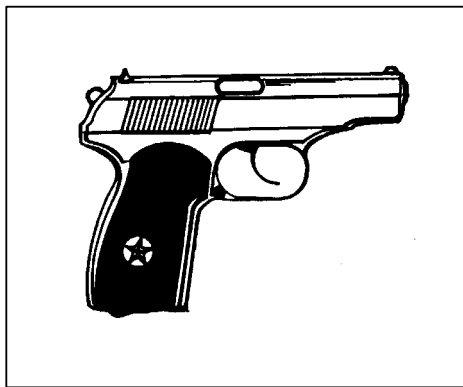
##### Training Information Outline

1. Small arms. Small arms are heavy and reliable. Their simple design allows easy training, handling, and maintenance. Automatic small arms are generally short for use from inside armored personnel carriers.

a. Semiautomatic pistols.

(1) Makarov 9-mm semiautomatic pistol (Figure 1). Characteristics are as follows:

- Ammunition, 9 x 18 mm.
- Length of weapon, 194 mm (7.5 inches).
- Magazine, 8 round.
- Range, effective, 50 meters.
- Weight, loaded, 1.33 kg (3 pounds).
- Weight, unloaded, 0.78 kg (1.5 pounds).



**Figure 1. Makarov 9-mm semiautomatic pistol.**

(2) Browning 9-mm “High-Power” pistol (Figure 2). Characteristics are as follows:

- Ammunition, 9 x 19 mm.
- Length of weapon, 203 mm (about 8 inches).
- Magazine, 13 round.
- Range, effective, 50 meters.

- Weight, loaded, 1.50 kg (3.3 pounds).
- Weight, unloaded, 0.86 kg (1.9 pounds).

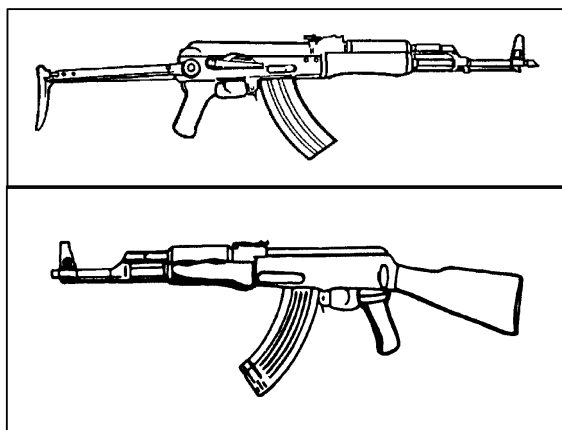


**Figure 2. Browning 9-mm “High-Power” pistol.**

b. Automatic rifles. Automatic rifles cannot sustain automatic fire because they do not have a quick-change barrel. These rifles are best used in two-shot bursts against point targets. Firing the automatic rifle stimulates other riflemen to fire.

(1) AK 47 7.62-mm assault rifles (Figure 3). The AK 47, 7.62-mm, comes with either a folding stock or standard stock. Characteristics of this weapon are as follows:

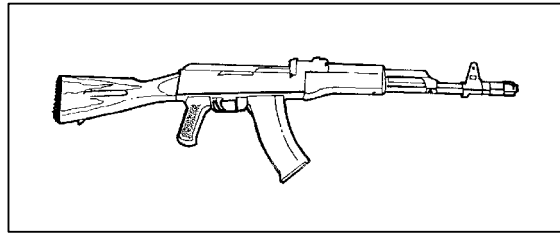
- Ammunition, 7.62 x 39 mm, ball or tracer.
- Magazine, 30 round, box type, detachable.
- Maximum effective ranges.
  - Automatic fire, 200 meters.
  - Semiautomatic fire, 300 meters.
- Rates of fire.
  - Cyclic, 640 rounds per minute.
  - Practical.
    - Automatic, 100 rounds per minute.
    - Semiautomatic, 40 rounds per minute.



**Figure 3. AK 47 assault rifle.**

(2) AK 74 5.45-mm assault rifle (Figure 4). The AK 74 may have either a wooden or skeleton stock and looks like an AKM with a muzzle brake. You may find more information about this weapon on the Internet at <http://www.prairienet.org/guns/arms/ak47.htm>. Characteristics of this weapon are as follows:

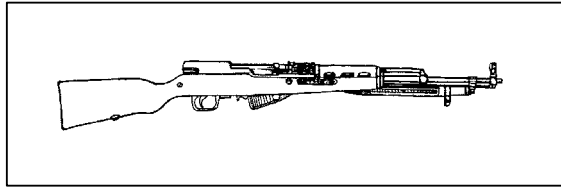
- Ammunition, 5.45 x 39 mm.
- Length (wooden stock model), 930 mm (36.6 inches).
- Length (folding stock model with stock folded), 690 mm (27.2 inches).
- Magazine, curved plastic, 30 round.
- Muzzle velocity, 900 mps (1,984 fps).
- Operation, gas, selective fire.
- Rate of fire, cyclic, 650 rounds per minute.
- Range, effective, 400 meters.
- Recognizable feature, “Ak-ak” sound when fired.
- Weight, unloaded, 3.6 kg (7.9 pounds).



**Figure 4. AK 74 5.45-mm assault rifle.**

(3) SKS 7.62-mm x 39-mm semiautomatic carbine (Figure 5).

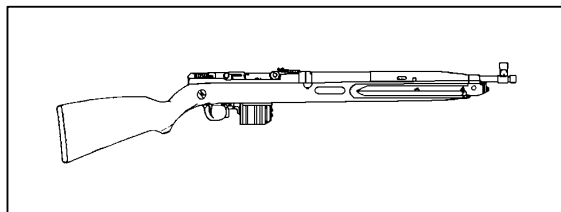
- Ammunition, 7.62-mm M43 cartridge.
- Length, 1.02 meters (40.2 inches).
- Magazine, integral, 10 round, triangular.
- Operation, gas, semiautomatic.
- Range, effective, 400 meters.
- Sights, day.
  - Front, hooded sight post.
  - Rear, adjustable from 100 to 1,000 meters.
- Weight, unloaded, 3.8 kg (8.4 pounds).
- Recognizable features.
  - Integral triangular magazine.
  - Gas port cylinder above the barrel.
  - Knife-type bayonet.
  - Hooded front sight post.



**Figure 5. SKS 7.62-mm x 39-mm semiautomatic carbine.**

(4) M-52/57 7.62-mm semiautomatic rifle ([Figure 6](#)). Characteristics of the M52/57 are as follows:

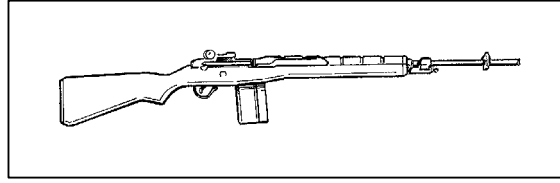
- Ammunition, 7.62-mm M43 cartridge.
- Length, 1 meter.
- Magazine, integral, 10 round, box type.
- Operation, gas, semiautomatic.
- Range, effective, 400 meters.
- Sights, day.
  - Front hooded sight post.
  - Rear, adjustable from 100 to 900 meters.
- Weight, unloaded, 4.45 kg (9.8 pounds).
- Recognizable features.
  - Gas port cylinder above the barrel.
  - Folding, knife-type bayonet.
  - Hooded front sight post.



**Figure 6. M-52/57 7.62-mm semiautomatic rifle.**

(5) M14A2 .30 caliber automatic rifle ([Figure 7](#)). Characteristics of the M14A2 are as follows:

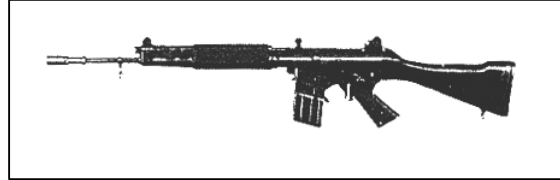
- Ammunition, 7.62 x 51 mm.
- Magazine, 20 round, box type.
- Rate of fire, 700 to 750 rounds per minute.
- Sight, day, 10X scope, adjustable focus.



**Figure 7. M14A2 .30 caliber automatic rifle.**

(6) FN FAL 7.62-mm assault rifle ([Figure 8](#)). Characteristics of the FN FAL are as follows:

- Ammunition, 7.62-mm.
- Length, 1,054 mm (41.5 inches).
- Magazine, 20 round, box type.
- Muzzle velocity, 2,800 fps (853 mps).
- Operation, gas, semiautomatic or automatic.
- Range, effective, 600 meters.
- Sight, day, rear, adjustable, 600-meter (656-yard).
- Weight, unloaded, 4.31 kg (9.5 pounds).
- Recognizable features.
  - Folding carrying handle forward of receiver.
  - Solid or folding stock.
  - Bipod and heavier barrel on automatic version.

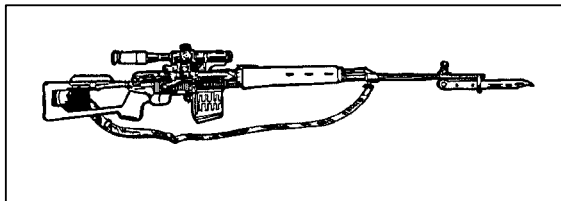


**Figure 8. FN FAL 7.62-mm assault rifle.**

c. Sniper rifles.

(1) SVD 7.62-mm sniper rifle Dragonou ([Figure 9](#)). Characteristics of the SVD 7.62-mm sniper rifle Dragonou are as follows:

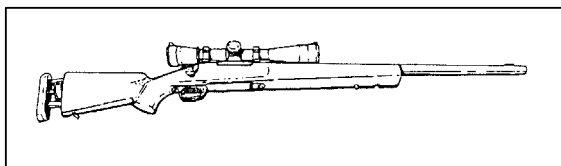
- Ammunition, 7.62 x 54-mm M-08 cartridge.
- Sight, day, rear, adjustable, 1,300-meter; or 4X scope.
- Length of weapon, 1.225 meters.
- Magazine, 10 round, box type, detachable.
- Maximum effective range, 1,300 meters.
- Operation, gas, semiautomatic.
- Weight, unloaded, 4.3 kg (9.5 pounds).



**Figure 9. SVD 7.62-mm sniper rifle Dragonov.**

(2) M24 7.62-mm sniper weapon system ([Figure 10](#)). Characteristics of the M24 7.62-mm sniper weapon system are as follows:

- Ammunition.
  - 7.62 mm.
  - .308 Winchester.
  - M118 special ball.
- Bipod, optional.
- Length (butt to muzzle), 1.08 meters (43 inches).
- Magazine, 7.62 mm, 5 round, integral.
- Muzzle velocity, 793 mps (2,600 fps).
- Maximum Effective Range, 1,000 meters.
- Sights, day, front and rear, iron, detachable.
- Weights.
  - Completely loaded, 6.47 kg (14.25 pounds).
  - System, sniper, complete, 29 kg (64 pounds).



**Figure 10. M24 7.62-mm sniper weapon system.**

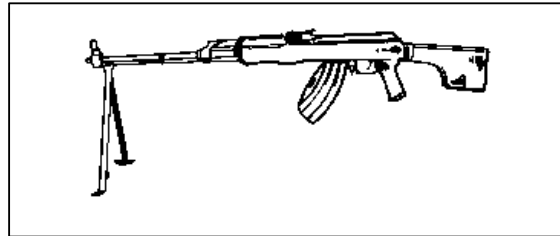
d. Machine guns.

(1) RPK 7.62-mm light machine gun ([Figure 11](#)). The RPK is a larger, heavier variant of the AKM assault rifle. The RPK has a chrome-plated barrel, chamber, and gas piston. A cyclic rate reducer is built into the trigger mechanism. Luminous night sights may be installed on the front and rear sights. Most of the RPK's moving parts are interchangeable with those of the AK or AKM assault rifles. The RPKS is a folding stock version used by airborne soldiers. Characteristics of the 7.62-mm RPK are as follows:

- Barrel, longer, heavier, and larger in diameter than the AKM's barrel; chrome plated.
- Bipod, stamped metal.
- Buttstock, wooden; heavier than that of the AKM.



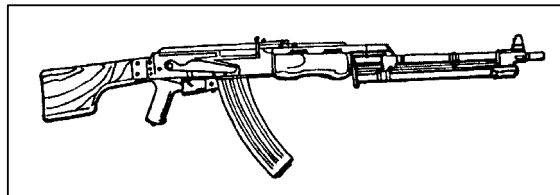
- Magazine.
  - 40 round, curved box type.
  - 75 round, spring-loaded, drum type.
  - 30 round, curved, box type (AKM magazine).
- Nightsight, infrared, compatible with some RPKs, but not all.
- Receiver, modified from the AKM receiver to fit the larger-diameter barrel.



**Figure 11. RPK 7.62-mm light machine gun.**

(2) RPK-74 5.45-mm light machine gun (Figure 12). Characteristics of the 5.45-mm RPK LMG are as follows:

- Ammunition, 5.45 x 39-mm, ball or tracer.
- Magazine, 30 or 40 round, box type, detachable.
- Maximum effective range, 800 meters.
- Rates of fire.
  - Cyclic, 800 rounds per minute.
  - Practical.
    - Automatic, 150 rounds per minute.
    - Semiautomatic, 50 rounds per minute.
- Nightsight, optional image-intensifying sight.

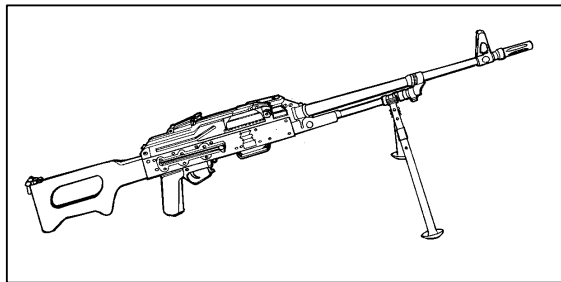


**Figure 12. RPK 5.45-mm light machine gun.**

(3) PKM 7.62-mm general-purpose machine gun (Figure 13). Characteristics of the PKM are as follows:

- Ammunition, 7.62 x 54 mm.
  - Ball.
  - Tracer.
  - AP.
  - API.
- Crew, two.
- Feed mechanism, 100-, 200-, or 300-round belt.

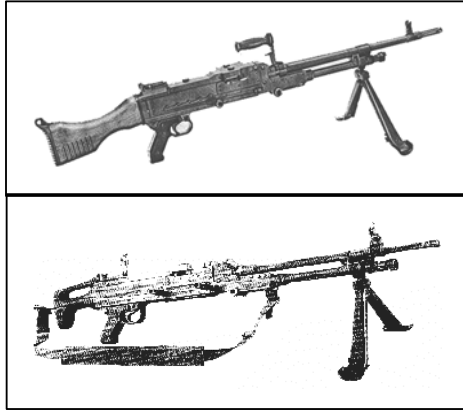
- Maximum effective range, 1,000 meters.
- Maximum range, 3,800 meters.
- Nightsight, image intensifier.
- Rates of fire.
  - Cyclic, 650 rd/min.
  - Effective, 250rd/min
- Unit of fire, 2,500.



**Figure 13. PKM general-purpose machine gun.**

(4) FN MAG 58 general purpose 7.62-mm machine gun ([Figure 14](#)). Characteristics of the FN MAG 58 general purpose 7.62-mm machine gun are as follows:

- Action, air-cooled, gas-operated.
- Ammunition, 7.62 x 51 mm.
- Barrel, quick-change.
- Bipod, built-in (weapon may be fired from tripod also).
- Feeding mechanism, belt.
- Operation, gas, air-cooled.
- Range, effective, 1,500 meters.
- Rate of fire, cyclic, 650 to 1,500 rounds per minute.
- Weights.
  - Loaded, 13.92 kg (30.69 pounds).
  - Unloaded, 10.98 kg (24.21 pounds).
- Recognizable features.
  - Gas regulator above bipod.
  - Numerous rounded rivet heads along the receiver body.



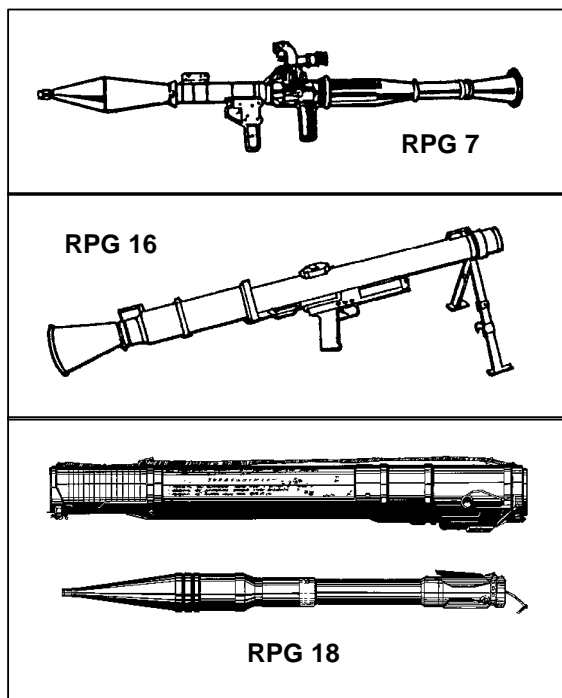
**Figure 14. FN MAG general purpose machine gun.**

2. Antitank weapons.

a. Grenade launchers.

(1) RPGs (rocket-propelled grenades) (Figure 15). Characteristics of RPGs are as follows:

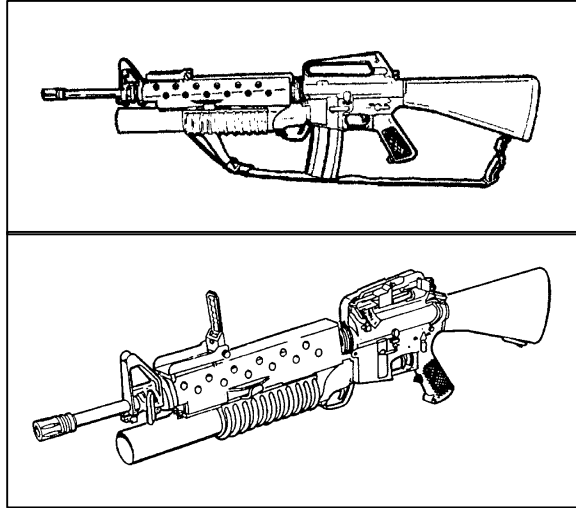
- Action, smooth-bore, muzzle-loading, recoilless shoulder weapon.
- Ammunition, 40 to 73 mm.
- Fin-stabilized.
- Shaped-charge.
- Antitank and antipersonnel HEAT grenades.
- Caliber, warhead is at least 80-mm (3.15 inches) in diameter.
- Diameter, launch tube, 40 mm (1.6 inches).
- Length, 950 mm (37.4 inches).
- Penetration, 175 to 320 mm (6.9 to 12.6 inches).
- Range, maximum effective, 150 meters (moving target) to 300 meters (static target).
- Rate of fire, four to six rounds per minute.
- Sights.
  - Night, infrared sight.
  - Day, front, fixed sight post.
  - Day, rear, adjustable folding leaf type.
- Recognizable features.
  - Large cone-tipped round.
  - Muzzle-loader.
  - Pistol grip trigger assembly.
  - Possible aluminum blast deflector at rear of weapon.
  - Steel barrel open at both ends.
  - Sight, rear, top-mounted, adjustable leaf.
  - Sight, front, top-mounted, fixed.
  - Two-piece plywood heat shield at midsection.



**Figure 15. RPG.**

- (2) M203 grenade launcher ([Figure 16](#)). Characteristics of the M203 are as follows:
- Action, single shot, breech loading, pump action (sliding barrel).
  - Ammunition, 40-mm grenades (HE, HEDP, CS, TP, smoke, and illumination).
  - Chamber pressure, 210 kg/cm.
  - Combat load, minimum, 36 HE rounds.
  - Sights, day.
    - Front sight post.
    - Rear leaf sight.
  - Length of rifle and grenade launcher, overall—9 cm (39 inches).
  - Muzzle velocity, 76 mps (250 fps).
  - Ranges.
    - Effective, about 400 meters (1,312 feet or 437.3 yards).
    - Maximum effective, fire-team-sized target, 350 meters (1,148 feet).
    - Maximum effective, vehicle or weapon point target, 150 meters (492 feet).
    - Minimum arming, about 14 to 38 meters (46 to 125 feet).
    - Minimum safe, HE, combat, 31 meters (102 feet or 34 yards).
    - Minimum safe, HE, training, 80 meters (262.4 feet or 87.5 yards).
  - Weights.
    - Unloaded, unmounted grenade launcher, 1.4 kg (3.1 pounds).
    - Loaded rifle and grenade launcher, 5.0 kg (11 pounds).
  - Round, about 227 grams (8 ounces).
  - Rate of fire, 5 to 7 rounds per minute.

- Recognizable features.
  - Breech loading.
  - Mounts beneath M16A1 or M16A2 rifle.
  - Pump action.

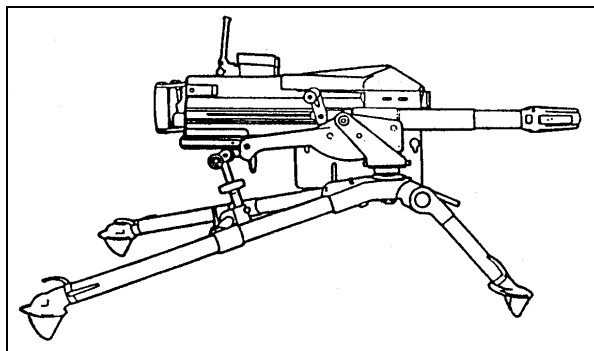


**Figure 16. M203 grenade launcher.**

(3) MK 19 grenade launcher ([Figure 17](#)). Characteristics of the MK 19 grenade launcher are as follows:

- Action, Air-cooled, blowback, with an electrical or manual firing mechanism.
- Indirect fire, single fire, or automatic.
- Fires from open bolt.
- Ammunition, Various belted 40-mm rounds; links eject with cartridge case.
- Feeds during recoil much like the M2 .50 caliber machine gun.
- Feeding mechanism, belt fed.
- Length, launcher, overall, 1,095 mm (40.5 inches or 1.125 yard).
- Muzzle velocity, 241 mps (790 fps).
- Ranges.
  - Maximum, 2,200 meters.
  - Maximum effective, point target, 1,500 to 1,600 meters.
- Rate of fire, 320 to 375 rounds per minute.
- Sights, day.
  - Rear, folding leaf.
  - Front, iron blade.
- Weights.
  - Launcher, unloaded, 34.3 kg (75.6 pounds).
  - M3 tripod, 20 kg (44.1 pounds).
  - Lightweight tripod, 9.1 kg (20.1 pounds).
  - Round, 227 grams (8 ounces).

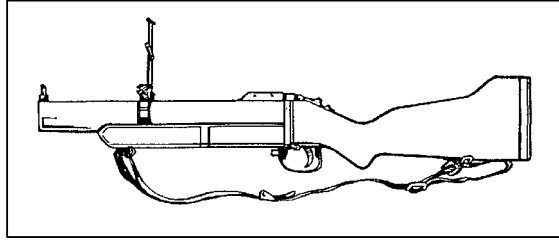
- Recognizable features.
  - Sight, rear adjustable.
  - Tripod, mounts forward under the receiver.
  - Short, boxy receiver.
  - Heavy barrel with flash suppressor.



**Figure 17. MK 19 grenade launcher.**

(4) M79 grenade launcher (Figure 18). Characteristics of the M79 grenade launcher are as follows:

- Action, break open, single shot, shoulder fired.
- Ammunition, 40 mm.
- Sights, day.
  - Rear, folding leaf.
  - Front, iron blade.
- Length, launcher, overall, 73.7 cm (29 inches).
- Muzzle velocity, 76 mps (250 fps).
- Ranges.
  - Maximum, 400 meters (1,312 feet or 437.3 yards).
  - Maximum effective, fire-team sized area target, 350 meters (1,148 feet).
  - Maximum effective, vehicle or weapon point target, 150 meters (492 feet).
  - Minimum safe firing, HE, combat, 31 meters (102 feet or 34 yards).
  - Minimum safe firing, HE, training, 130 meters (426 feet or 142 yards).
- Recognizable features.
  - Adjustable rear sight located in center of barrel.
  - Short, wide-bore barrel.
- Weights.
  - Round, 227 grams (8 ounces).
  - Weapon, unloaded, 2.72 kg (6 pounds).
  - Weapon, loaded, 2.95 kg (6.5 pounds).

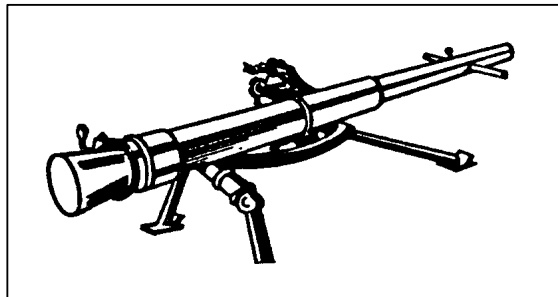


**Figure 18. M79 grenade launcher.**

b. Recoilless weapons.

(1) SPG-9 73-mm antitank recoilless gun (Figure 19). Characteristics of the SPG-9 73-mm antitank recoilless gun are as follows:

- Action, recoilless.
- Ammunition.
  - 73-mm fin-stabilized, rocket-assisted HEAT projectile.
  - 4-kilogram rocket-assisted HE round.
- Man-portable, but usually carried on a truck or APC.
- Ground mount, tripod.
- Muzzle velocity, high; increases to 700 meter per second with rocket assist.
- Range, effective, HEAT projectile, 1,000 meters.
- Penetrates 400 mm of armor.
- Sights.
  - Infrared sight available.
  - Passive night sight available.
- Weights.
  - HEAT projectile, 3.5 kilograms.
- Recognizable features.
  - Tripod.
  - Man-portable.

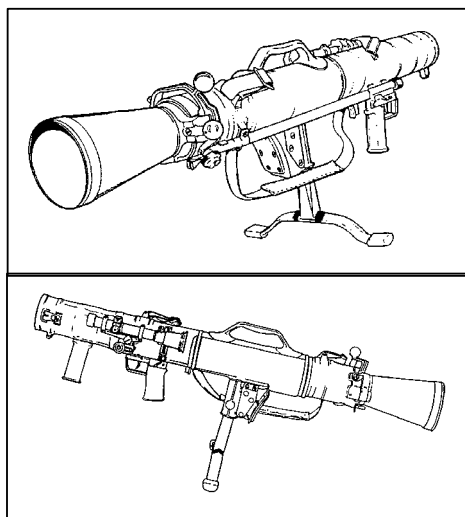


**Figure 19. SPG-9 73-mm antitank recoilless gun.**

(2) Carl Gustaf 84-mm recoilless rifle (Figure 20). Characteristics of the Carl Gustaf 84-mm recoilless rifle are as follows:

- Versatile, powerful weapon system.
- Effective against heavy armor, APCs, landing craft, or entrenched troops.

- Ammunition.
  - HEAT 751 penetrates tiles without setting them off, then blasts through armor into interior.
  - HEAT 551 is effective against armor vehicles and other hard targets to 700 meters.
  - TP 552 is an inert warhead for training and practice; it is ballistically matched to HEAT 551 round.
  - HEDP 502 is an dual-purpose HE and HEAT round for urban combat. Effective against light armored vehicles, concrete and brick walls, field fortifications, and ground forces. In the HEAT role, the round has a devastating behind-armor effect.
  - HE 441B can be set to impact detonation or air burst; used to combat troops in the open or behind cover, soft-skinned vehicles, and other soft targets.
  - Illumination 545 rapidly illuminates target areas.
  - Smoke 469B develops a smoke screen instantly on impact.

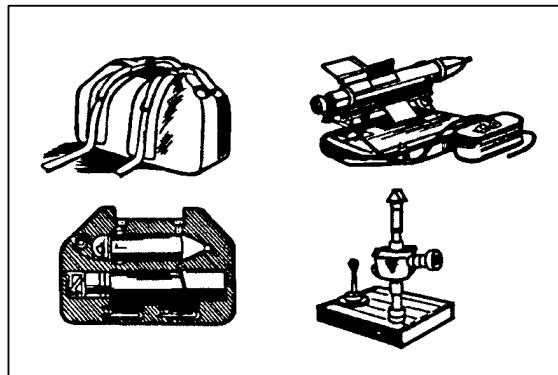


**Figure 20. Carl Gustav 84-mm recoilless rifle.**

- c. Guided missiles.
  - (1) Sagger or Swatter with carrying case and mount ([Figure 21](#)).
  - (a) Characteristics common to the Sagger and Swatter.
    - Sights. Optical viewer for tracking target and missile (day only).
    - Employment. Employed on the ground while the crew is “buttoned up” or mounted on a BMP, BMD, BRDM-2, or helicopter.
    - Target. Can defeat most known armor.
    - Gunners. Must be highly trained, because they must track the target and the missile through an optical viewer at the same time they fly the missile with a joystick.
    - Missile speed. Sagger and Swatter missiles are slower than the TOW.



- Night use. Neither the Sagger nor the Swatter may be used at night; they have no night vision capability.
  - Vulnerabilities.
    - Wire breakage. Bushes and other obstacles may break wires.
    - Early detonation of warhead. Trees or heavy brush can detonate the ATGM warhead.
- (b) Distinguishing characteristics of the Sagger.
- Tracking, optical (same as Swatter).
  - Wire guided.
  - Minimum tracking range, 500 meters (same as Swatter).
  - Maximum effective range, 3,000 meters (slightly more accurate at this range than the Sagger).
  - Invulnerable to electronic countermeasures.
  - Highly mobile.
  - Weight, 11.3 kg.
  - Dimensions.
    - Length, 864 mm.
    - Diameter, 120-mm.
- (c) Distinguishing characteristics of the Swatter.
- Tracking, optical (same as Sagger).
  - Radio guided.
  - Minimum tracking range, 500 meters (same as Sagger).
  - Maximum effective range, 3,000 meters (slightly less accurate at this range than the Sagger).
  - Vulnerable to electronic countermeasures.
  - Slightly less mobile than the Sagger.
  - Dimensions unknown.
  - Weight unknown.

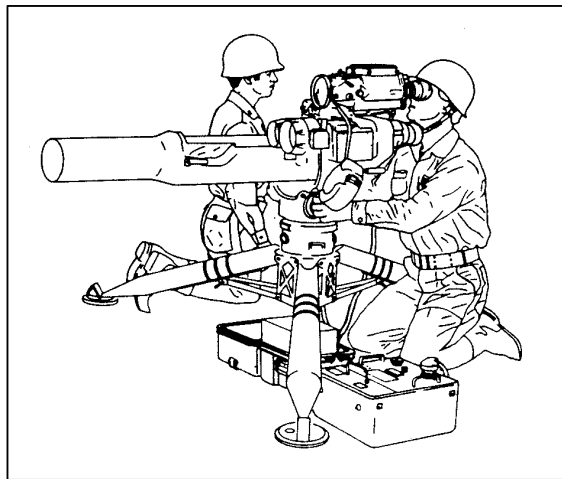


**Figure 21. Sagger or Swatter with carrying case and mount.**

(2) TOW 2 (BGM-71D) heavy antitank weapon ([Figure 22](#)). Characteristics of the TOW 2 (BGM-71D) heavy antitank weapon are as follows:

- Employment by ground or vehicle mount.
- Range, 3,750 feet (0.71 mile).

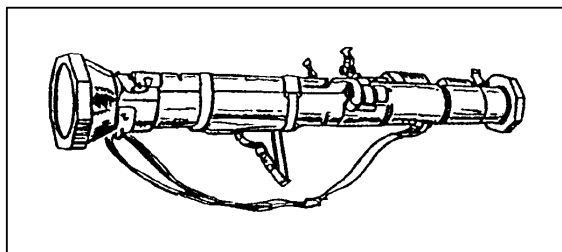
- Ammunition, four configurations.
- Weight, 190.5 lb, complete.



**Figure 22. TOW 2 (BGM-71D) heavy antitank weapon.**

(3) M136 AT4 light antiarmor weapon ([Figure 23](#)). Characteristics of the M136 AT4 are as follows:

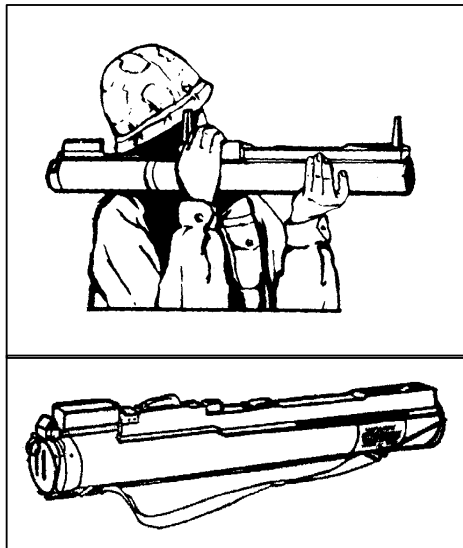
- Ammunition, integral, rocket-type 84-mm cartridge.
- Caliber, 84 mm.
- Length of launcher, 1.02 meters (40 inches).
- Length of rocket, 460 mm (18 inches or 0.5 yard).
- Penetration, more than 14 inches of armor.
- Ranges.
  - Maximum, 2,100 meters (1.3 mile).
  - Maximum effective, 300 meters.
- Weights.
  - Loaded, 8.5 kg (18.8 pounds).
  - Unloaded, 6.7 kg (14.8 pounds).



**Figure 23. M136 AT4 light antiarmor weapon.**

(4) M72-series light antitank weapon (LAW) (Figure 24). Characteristics of the M72-series LAW are as follows:

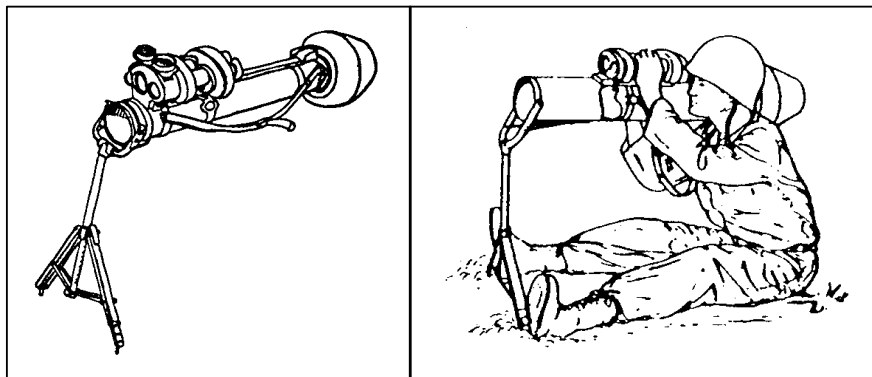
- Caliber, 66 mm.
- Firing mechanism, percussion.
- Muzzle velocity, 144.8 mps (475 fps).
- Lengths.
  - Closed, 0.67 meter (26.38 inches).
  - Extended, less than 1 meter.
- Ranges.
  - Maximum, 1,000 meters (1 km) (1,094 yards or 0.621 mile).
  - Maximum effective, moving target, 165 meters (541 feet).
  - Maximum effective, stationary target, 200 meters (60 feet).
- Sight, night, AN/PVS-4.
- Weight, 2.3 to 2.5 kg (5.1 to 5.5 pounds).



**Figure 24. M72-series LAW.**

(5) M47 Dragon medium antitank weapon (Figure 25). Characteristics of the M47 Dragon are as follows:

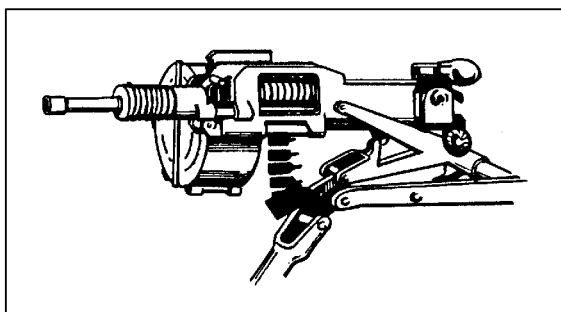
- Ground employed, direct line-of-sight.
- SACLOS/wire guidance system.
- Night vision equipment, thermal imaging device.
- Range, 1,000 meters in 12 seconds.



**Figure 25. M47 Dragon medium antitank weapon.**

d. Grenade launchers. The only weapon included in this category for purposes of this task is the AGS-17 automatic 30-mm grenade launcher (Figure 26). Characteristics of the AGS-17 automatic 30-mm grenade launcher are as follows:

- Action, selective-fire mode.
- Ammunition includes 30 x 28.5-mm fragmentary, HE, and possibly HEAT also.
  - Bursting radius, 7 meters.
  - Crew, three.
  - Length of weapon, 0.80 meter.
- Magazine, 29 round, belt fed.
- Ranges, effective.
  - Direct, 1,200 meters.
  - Indirect, 1,730 meters.
- Rate of fire.
  - Cyclic, 300 to 350 rds/min.
  - Effective, 40 to 60 rds/min.
- Unit of fire, eighty-seven.
- Weight of weapon.
  - Loaded, 43 kg.
  - Unloaded, 17.75 kg.



**Figure 26. AGS-17 automatic 30-mm grenade launcher.**

e. Artillery.

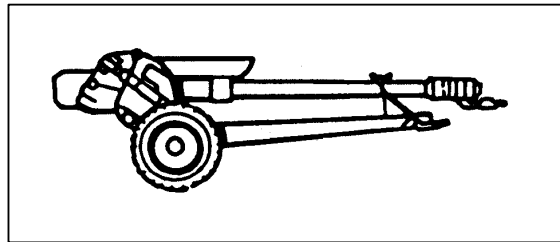
(1) D-20 152-mm gun/howitzer (Figure 27). The D-20's range compensates for its cumbersome nature—it is large, and it is too heavy for a simple towed carriage. Other characteristics of the D-20 are as follows:

(a) Ammunition. The D-20 uses case-type, variable-charge, separate-loading ammunition.

- Frag-HE.
- CP.
- AP-T.
- HE/RAP.
- HEAT.
- HEAT-SS (spin stabilized).
- Flechette.
- Scatterable mines (AT and AP).
- Semi-active laser.
- Chemical (CW agent dispersed by a TNT bursting charge).
  - The 40-kg round has 2.8 kg of the Sarin CW agent.
  - The 42.5-kg round has a 152-mm viscous Lewisite projectile and includes 5.4 kg CW agent.
- Smoke (D-540).
- Illuminating (S-540).
- Tactical nuclear (0.2 kiloton).

(b) Ranges.

- Semi-active laser, 18 kilometers.
- HE/RAP, 24 kilometers.



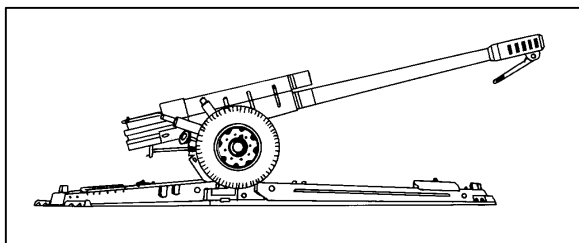
**Figure 27. D-20 152-mm gun/howitzer.**

(2) D-30. 122-mm howitzer (Figure 28). Characteristics of the D-30 are as follows:

- Ammunition, variable charge, case type, separate loading.
  - Chemical, CW agent is dispersed by a TNT bursting charge.
  - 1.3 kg of Sarin CW in a 22.5 kg round.
  - 3.3 kg of viscous Lewisite CW in a 23.1 kg round (122-mm projectile).
  - Flechette.
  - Fragmentary-HE.
  - HEAT-FS.
  - Illuminating, S-462, weighs 22.4 kg.
  - Incendiary.

- Leaflet.
- RAP (maximum range 21,900 meters).
- Smoke, D-462, weighs 22.3 kg.
- Angle of fire, high to low.
- Crew, eight.
- Sights.
  - Infrared sight available.
  - Passive night vision sight available.
- Tactical employment, antitank defense.
- Traverse, 360 degrees.
- Vulnerabilities include minimum crew protection.

**NOTE:** Aligning the D-30 directly over the support rails reduces the weapon's maximum effective range significantly (to 7,000 meters).



**Figure 28. D-30 122-mm howitzer.**

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide a model or a photograph of each weapon in this task to the soldier for 10 seconds. If photographs or models cannot be obtained, use the illustrations in this task.

*Brief Soldier:* Tell the soldier that photographs or illustrations of weapons will be shown to him for 10 seconds each. During the 10-second viewing, the soldier must give the nomenclature of that weapon.

### **EVALUATION GUIDE**

#### **Performance Measure**

#### **Results**

IDENTIFY \_\_\_ out of \_\_\_ weapons by nomenclature.

P      F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

**Required**

None

**Related**

FM 7-8

FM 71-1

## **EMPLOY FIELD-EXPEDIENT EARLY WARNING DEVICES**

### **071-730-0008**

#### **CONDITIONS**

Given dry gravel, dry vegetation, smoke and concussion grenades, cans, cloth strips, brass ammunition casings, trip wire, and paint.

#### **STANDARDS**

When activated, the devices attract attention by sound or sight.

#### **TRAINING AND EVALUATION**

##### **Training Information Outline**

1. Creative field-expedient devices are usually noisemakers and rely on inventiveness. The ones in this task summary are some commonly used examples.
2. The two types of field-expedient early warning devices are ground and container.
  - a. The ground type consists of dry vegetation or gravel placed on a dry location or hole so that anyone stepping on it will make noise.
    - (1) Select an area for placement that cannot be bypassed without drawing attention.
    - (2) Choose an area large enough that it cannot be stepped over or jumped over easily or quietly.
    - (3) Spread dry leaves and twigs or gravel in the area selected.
    - (4) Test the device. Have one man position himself in the OP or fighting position. Have someone else activate the device. If nothing can be heard, move the device closer to the OP or fighting position.
  - b. The container type usually consists of a container, a trip wire, a noisemaker, and an attachment device.
    - (1) Use a metal can, food, or ammunition container, or any other container that will produce noise if it is shaken with a rock, expended cartridge case, marble, or other noisemaker in it.
    - (2) The trip wire is no more than 40 feet long. Place it about 18 inches above the ground, and anchor it securely on each end.
    - (3) Punch holes in the sides and in the bottom of the container to reduce wind movement and to allow water to drain.
    - (4) Securely attach the container to the trip wire. More than one container can be attached.
    - (5) If barbed wire is emplaced, attach containers to several of the strands.
  - c. The devices should be tested to ensure they work properly.
    - (1) One man activates the device while another listens and observes from the position the device protects.



- (2) If nothing can be seen or heard, move the device closer.
  - d. All devices should be concealed or camouflaged.
3. Field-expedient early warning devices can be constructed using smoke and concussion grenades and trip wire.
- a. Position smoke grenades so they do not obscure the view of the personnel or vehicle that activates the device.
  - b. Place concussion grenades on the enemy side of a large tree, rock, or other object that will protect the defender from the effects of the blast.

### EVALUATION PREPARATION

*Setup:* At the test site, provide a defensive position with appropriate avenues of approach and the materials and equipment given in the task conditions statement.

*Brief Soldier:* Tell the soldier to prepare three early warning devices, one ground type, one container type, and one using a smoke or concussion grenade.

### EVALUATION GUIDE

Performance Measures	Results	
1. Emplace a ground-type device.	P	F
a. Select an appropriate area for the device.		
b. Apply the noisemaker to the ground.		
c. Ensure the device cannot be bypassed without detection.		
d. Test the device for effectiveness.		
2. Emplace a container-type device.	P	F
a. Select an appropriate area for the device.		
b. Put holes in the sides and bottom of the container.		
c. Attach the container to a trip wire or to barbed wire.		
d. Put the trip wire (if used) about 18 inches above the ground.		
e. Test the device for effectiveness.		
3. Emplace a grenade-type device.	P	F
a. Place smoke grenades where they will not block the defender's view of the enemy activating the device.		
b. Place concussion grenades on the enemy side of a tree, rock, or other object.		
c. Use trip wire no longer than 40 feet.		
d. Put the trip wire about 18 inches above the ground.		
e. Align the safety pin in the direct line of pull of the trip wire.		

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

#### **Required**

None

#### **Related**

FM 5-250

FM 5-34

# RADIO

## PREPARE SINGARS (MANPACK) FOR OPERATION 113-587-1064

### CONDITIONS

Given a receiver-transmitter (RT) [RT-1523](#), antenna [AS-3693/PRC](#), handset [H-250/U](#), battery box [CY-8523A/PRC](#), battery [BA-5590/U](#), and field pack (nylon large).

### STANDARDS

Inspect components for serviceability. Assemble components, perform radio function check, and load required frequencies so that the radio can be used to communicate during operations.

### TRAINING AND EVALUATION Training Information Outline

1. Inspect components.
  - a. Inspect RT, antenna, handset, and [ANCD](#) or [ICOM](#) with cable for dirt or damage.
  - b. Inspect the battery for damage, corrosion, or leakage.
  - c. Clean or replace as required. Report damaged equipment to supervisor.
2. Install components.
  - a. Install battery.

### WARNING

The lithium battery used with this equipment contains hazardous materials. To prevent personal injury or equipment damage—

- DO NOT heat, incinerate, crush, puncture, disassemble, or otherwise mutilate the battery.
- DO NOT short-circuit, recharge, or bypass internal fuzes.
- DO NOT store the battery in the equipment.
- DO NOT place used batteries in ordinary trash. Turn them in through supply channels.
- TURN OFF equipment and leave the area immediately if you feel the battery case becoming very hot, if you hear a battery hissing or burping, or if you detect a rotten-egg smell.
- REMOVE the battery only after it cools.

(1) Stand the RT on the front panel guards. Place the battery box on the bottom of the RT, aligning the box systems connector with the RT systems connector.

(2) If installing a used battery, check the tag or decal on the battery, and note battery life condition numbers.

(3) Place the battery in the battery box and mate the connectors. Close the battery box cover and secure the hold-down latches.

(4) Set battery life condition.

(a) Set the **FCTN** switch to **LD**.

(b) If the battery is new, use the keyboard to enter the number “00.” If the battery you installed is not new, enter the number on the tag or decal.

(c) Press **BATT/CALL**—the display will show “00.”

(d) Press **CLR**—the display will show two lines.

(e) Press number buttons—enter “00” for new battery. On a used battery, enter the two-digit number for the number of hours the battery was used, for example, “03” for three hours of use, on the tag or decal on the used battery. You must enter two numbers. The display will show the number you entered.

(f) Press **STO**—the display will blink and show number stored.

(g) Immediately after installation, set **FCTN** switch to **SQ ON** using the battery life condition indicator.

b. Install antenna.

(1) Stand the RT on the front panel guards. Place the battery box on the bottom of the RT, aligning the box systems connector with the RT systems connector.

(2) Carefully mate and screw the antenna base into the RT antenna connector. Hand tighten.

c. Connect the handset to the **AUD/ DATA** connector on the RT.

(1) Stand the RT on the front panel guards. Place the battery box on the bottom of the RT, aligning the box systems connector with the RT systems connector.

(2) Push handset connector onto **AUD/DATA** connector and twist right (clockwise) to lock in place.

3. Perform radio function check.

a. Set the function switch to the Z-A position. “GOOD” will display.

b. Set the function switch to the TST position. The three displays you will see are—

- The letter “E” on the left, the letter “C” on the right, and a line across the bottom of the screen.

- A screen full of vertical lines.

- The word “GOOD.”

c. Test the transmitter.

(1) Set the function switch to **SQ ON**.

(2) Key the hand set. The marker should display a “+” or a “1.”

d. Check battery life condition indicator.

(1) Set the **FCTN** switch to **LD**. The display should light up.

(2) Press the keyboard **BATT/CALL** button. The display should show numbers entered for battery life condition.

4. Load frequencies into the RT.

a. Turn the **FCTN** switch to the **LD** position and the **CHAN** select switch to the **MAN** position. Depress **FREQ** on the keyboard. The display should read “30000.”

- b. Depress the **CLR** button. The display will show six dashes.
  - c. Using the keyboard, enter the frequency number from the SOI extract.
  - d. Press **STO ENT** on the keyboard. The display will blink to indicate that the RT has accepted the entry.
  - e. Return the **CHAN** switch to **CUE**.
  - f. Repeat the previous step for each remaining frequency.
5. Place assembled radio in field pack.
  - a. Insert radio in field pack. Ensure antenna is on the left as you face the front of the field pack.
  - b. Secure the radio to the field pack.
  - c. Adjust the harness to fit for carrying.

### EVALUATION GUIDE

Performance Measures	Results	
1. Inspect components.	P	F
2. Install components.	P	F
3. Perform radio function check.	P	F
4. Load frequencies into the RT.	P	F
5. Place assembled radio in field pack.	P	F

### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### REFERENCES

Required	Related
None	TM 11-5820-890-10-1 TM 11-5820-890-10-3

## **OPERATE SECURE SINCGARS SINGLE CHANNEL (SC) 113-587-2070**

### **CONDITIONS**

Given a SINCGARS, assigned frequency(ies) and call signs as required, plus a requirement to operate the radio in the single channel (SC) mode.

### **STANDARDS**

Place the SINCGARS into operation and operate it in the single-channel mode without damaging the equipment. Inspect the radio, load and store the required frequency(ies) in the radio's memory, and set the switches and controls to their correct positions to perform their desired functions.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Before-operation PMCS.
  - a. Preset controls.
    - (1) KY-57—OFF.
    - (2) RT.
      - DATA—OFF.
      - VOL and DIM—Mid-range.
      - MODE—SC.
      - CHAN—MAN.
      - RF—LO.
      - FCTN—STW.
  - b. Turn CB1 ON or assemble manpack.
  - c. Test RT circuits.
    - (1) Set FCTN to Z-A. Wait for display to show "GOOD."
    - (2) Set FCTN to TST.
      - (a) Displays cycle as shown in PMCS chart, item 3.
      - (b) If removing the antenna does not correct the "FAIL 1" message, or if other fail codes appear, notify maintenance.
    - (c) Display shows "GOOD" at end of test.
  - d. Test transmitter.
    - (1) Set FCTN to SQ ON.
    - (2) Press and hold the handset push-to-talk (PTT) switch. Signal indicator lights at 1 or 2.
  - e. Test mounting adapter and base (vehicular only).
    - Set FCTN to SQ OFF. Note noise level.
    - Set FCTN to SQ ON. Noise level must be lower.

- f. Set battery life condition (manpack only).
  - g. Annotate DA Form 2404. (Date column c or indicate faults.)
2. Load and operate.
    - a. MAN channel.
      - (1) Set FCTN to LD.
      - (2) Press keyboard FREQ and CLR buttons.
      - (3) Press number buttons of frequency.
      - (4) Press STO ENT.
      - (5) Set FCTN to SQ ON.
    - b. KY-57 COMSEC device.
      - (1) Turn KY-57 ON.
      - (2) Press and release handset PTT switch to clear alarm.
      - (3) Connect fill cable to KY-57 FILL connector.
      - (4) Connect KYK-13 to fill cable.
      - (5) Set KY-57 FILL switch to 1 and MODE switch to LD.
      - (6) Set KYK-13 FILL switch to 1 (traffic encryption key [TEK] position) and MODE switch to ON.
      - (7) Press and release handset PTT switch. The handset will beep and the KYK-13 parity indicator will flash.
      - (8) Set KY-57 MODE switch to C.
      - (9) Set KYK-13 MODE switch to OFF.
      - (10) Disconnect fill cable from RT and KYK-13.
      - (11) Set FCTN to SQ ON.
  3. Closing the net.
    - a. NCS (net control station) closes net.
 

**“W6T, THIS IS T16. CLOSE DOWN, OVER.”**

**“T01, ROGER, OUT.”**

**“T02, ROGER, OUT.”**

**“T03, ROGER, OUT.”**
    - b. The NCS closes down last. After all net members have responded, the NCS transmits—
 

**“W6T, THIS IS T16. ROGER, OUT.”**
    - c. Perform after-operation PMCS.
      - (1) Set KY-57 FILL switch to Z 1-5, then reset to position 1. Set POWER switch to OFF.
      - (2) Set RT FCTN switch to TST.
        - Displays cycle as shown in PMCS chart, item 3.
        - Display shows “GOOD” at end of test.
      - (3) Set RT FCTN switch to Z-A. Wait for display to show “GOOD.”

- (4) Set RT FCTN switch to STW.
- (5) Turn CB1 OFF or disassemble manpack (battery life condition).
- (6) Annotate DA Form 2404 (initial column e).

### **EVALUATION PREPARATION**

*Setup:* At the test site, provide all equipment and materials listed in the task conditions statement.

*Brief Soldier:* Tell the soldier to operate the radio in the single channel (SC) mode.

### **EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Load correct frequency(ies).	P	F
2. Load traffic encryption key (TEK).	P	F
3. Make a secure radio check.	P	F

### **FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

### **REFERENCES**

<b>Required</b>	<b>Related</b>
None	DA Pam 738-750
	FM 24-18
	FM 24-19
	TM 11-5820-890-10-1
	TM 11-5820-890-10-3
	Unit SOI



## **OPERATE SECURE SINCGARS FREQUENCY HOPPING (FH) (NET MEMBERS) 113-587-2071**

### **CONDITIONS**

Given an operational SINCGARS, a designated hopset, an SOI or extract of an SOI, a net control station (NCS), and a requirement to operate as a member station in a radio net.

### **STANDARDS**

Operate as a member station within the unit's radio net. Follow the instructions of the NCS operator and set the radio's controls to the frequency-hopping (FH) mode of operation. Establish communications with other member stations within the net.

### **TRAINING AND EVALUATION** **Training Information Outline**

1. Load.
  - a. Perform before-operation PMCS.
  - b. Load MAN frequency.
  - c. Load TEK.
  - d. Load TSK.
    - (1) Connect MX-10579 to RT AUD/FILL connector with fill cable.
    - (2) Set MX-10579 FCTN switch to ON and SELECT switch to T1 (TSK).
    - (3) Set RT FCTN to LD/V and MODE to FH.
    - (4) Press keyboard H.LD/O button.
    - (5) Display cycles and shows "COLD."
    - (6) Set RT FCTN to LD.
    - (7) Turn MX-10579 OFF and disconnect fill cable from RT and MX-10579.
2. Operate.
  - a. Cold start net opening procedures.
    - (1) Check RT control settings: FCTN to LD, MODE to FH, CHAN to MAN; display shows "COLD."
    - (2) Radiotelephone procedural words include "OVER" and "OUT. "

<b>OVER</b>	<b>I have finished my transmission to you, and I expect a reply.</b>
<b>OUT</b>	<b>I have finished my transmission to you. Do not reply.</b>

**WARNING****ELECTRONIC WARFARE THREAT**

**Do not make any unnecessary transmissions. The RT is operating on a single frequency and is vulnerable to radio direction finding (RDF) equipment. Everyone should operate as a team. Each station answers in sequence, without delay.**

**NOTE:** The NCS prepares a list of call signs. Check off each station when initial communications are established. Check off each station a second time when FH communications are established.

- (3) NCS establishes communications on MAN channel.

**“W6T, THIS IS T16, OVER.”**

- (4) Net members answer in sequence.

**“T01, OVER. T02, OVER. T03, OVER” (and so on).**

- (5) When all net members have answered, the NCS directs—

**“W6T, THIS IS T16. STANDBY FOR ERF. STORE IN 1, MEET ME ON 1. OUT.”**

(6) Note that the NCS said “OUT.” Any station that tries to reply at this point aids the enemy by jamming the NCS ERF transmission.

- (7) NCS ERFs.

- (8) Net members display shows: “HFnnn.”

<b>H</b>	<b>holding memory</b>
<b>F</b>	<b>hopset</b>
<b>nnn</b>	<b>net identification (three numbers)</b>

- (9) Net members store ERF.

- (a) Press keyboard buttons STO ENT and 1. Wait for display to blink.

- (b) Set CHAN switch to 1.

(c) Display shows only “Fnnn.” The H has disappeared; which means that the hopset has been stored in permanent memory.

- (10) Set FCTN to SQ ON.

- (11) Wait for the NCS to call the net.

**WARNING**  
**LOST COMMUNICATIONS**

**If you hear no transmissions on Channel 1, reset the CHAN switch to MAN and FCTN switch to LD. Wait for the NCS to call you. Do not call the NCS. Remember the EW threat.**

(12) NCS establishes communications channel 1.

**“W6T, THIS IS T16, OVER.”**

(13) Net members answer in sequence.

**“T01, OVER. TO2, OVER. TO3, OVER” (and so on).**

(14) NCS opens net.

- For net members who answer on channel 1—

**“W6T, THIS IS T16. ROGER, OUT.”**

- For net members that do not answer on channel 1—NCS returns to MAN channel and establishes communication. NCS then repeats cold start and responds as follows to each net member who answers on Channel 1:

**“ROGER, OUT.”**

b. Electronic warfare (EW).

(1) The following conditions may cause noisy or intermittent communications:

- Power lines or equipment located nearby.
- Atmospheric conditions such as sun spots, the aurora borealis, or lightning.
- Faulty equipment.
- Mutual interference by radios operating in the same frequency band.
- Deliberate jamming.

(2) The following are some solutions to communications problems:

- Disconnect your antenna to determine if the problem is inside your set.
- Move away from nearby power lines or equipment.
- Move a short distance in different directions and see if that reduces the problem.
- Use terrain features, such as hills, or manmade features, such as buildings or steel bridges, to mask your antenna from the direction of the enemy.
- Above all, keep operating and report interference to your immediate supervisor.

c. Cue late net entry.

(1) Used to enter an operating FH net.

(2) Normally answered by alternate NCS in large or very busy nets.

- (3) Load cue frequency in cue channel.
  - (a) Set CHAN to CUE.
  - (b) Repeat procedures used for loading manual channel.
- (4) Set controls. Set FCTN to LD, RF to HI or PA, set CHAN to CUE.
- (5) Initiate cue call.
  - (a) Turn KY-57 OFF and key the handset's push-to-talk (PTT) switch for 4 to 6 seconds.
  - (b) Turn the KY-57 ON and key the handset to clear the alarm.
  - (c) When anyone is talking on the net, neither the NCS nor the alternate NCS (ALT) can receive your cue signal. So, if neither the NCS nor the alternate NCS (ALT) responds within 30 seconds of your cue call, turn the KY-57 OFF, key the handset PTT switch for 4 to 6 seconds, turn the KY-57 back ON, then key the handset again to clear the alarm. Finally, repeat the following procedures every 30 seconds until the NCS or ALT calls you:

**NCS or ALT:** "UNKNOWN STATION, THIS IS T16, OVER."

**NET MBR:** "T16 THIS IS T01, REPORTING INTO NET, OVER."

**NCS or ALT:** "T01 THIS IS T16. MEET ME ON MANUAL, OUT."

**NOTE:** The net member cued the net because he needed a cold start. The NCS or ALT does not need to issue any other instructions. The net member automatically sets his controls for a cold start.

- (6) Net member sets CHAN to MAN and FCTN to LD.
- (7) NCS and net member conduct normal cold start net opening.

### EVALUATION PREPARATION

*Setup:* At the test site, provide all equipment and materials listed in the task conditions statement.

*Brief Soldier:* Tell the soldier to operate the radio as a member station in a radio net.

**EVALUATION GUIDE**

<b>Performance Measures</b>	<b>Results</b>	
1. Perform net member premission checks.	P	F
2. Perform net member cold start net opening.	P	F
3. Perform net member cue late net entry.	P	F

**FEEDBACK**

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES**

<b>Required</b>	<b>Related</b>
Unit SOI	DA Pam 738-750
	FM 24-18
	FM 24-19
	TM 11-5820-890-10-1
	TM 11-5820-890-10-3

## USE THE KTC 1400(\*) NUMERICAL CIPHER/ AUTHENTICATION SYSTEM 113-573-4006

### CONDITIONS

Given map coordinates to be encoded, encoded numerical information to be decoded, an authentication challenge for the reply, a pencil, and paper. Also given a unit SOI extract with KTC 1400(\*) numeral cipher/authentication system and supplemental instructions.

### STANDARDS

Use the KTC 1400(\*) numeral cipher/authentication system to encode and decode, and provide a correct reply for a challenge to authenticate.

### TRAINING AND EVALUATION

See security precautions ([Figure 1](#)).

SECURITY PRECAUTIONS	
1.	Each code set of the KTC 1400(*) remains effective for 12 hours unless the signal officer directs otherwise. (Refer to unit SOI supplemental instructions, items 102, 113, 114, and 120.)
2.	Encrypt no more than fifteen characters with a single SET INDICATOR. If you must encrypt an entire message, use the operation code KTC 1400(*).
3.	Use only random letter combinations as SET INDICATORS.
4.	Use the variant letters provided for each numeral impartially and randomly.
5.	Each table has plaintext numbers and letters after the fifth, twelfth, and eighteenth lines (included to ease operation). DO NOT use these as cipher values.
6.	In challenge and reply authentication, verify only the station. <i>Do not</i> accept a challenge as an authentication. To verify both stations, challenge them both, then wait for their reply. (Refer to unit SOI authentication instructions, item 115.)
7.	Challenge again if you receive an incorrect reply, if the station requests a "standby," or if you notice an unusual delay between your challenge and their reply.
8.	Never give the challenge and reply in the same transmission (self-authentication).

**Figure 1. Security precautions.**

## EVALUATION GUIDE

Performance Measures	Results	
1. Find the line encryption. Reference the unit SOI, item 120. a. Randomly select any two letters (except "Z") for SET INDICATOR (SI). b. Look in the LINE INDICATOR column and find the first letter you selected. c. Look in the LINE INDICATOR column and find the second letter you selected. d. Look in the LINE INDICATOR column and find the SET LETTER. Use this line to encrypt up to 15 characters.	P	F
2. Encrypt the grid zone letters that were provided to you by the supervisor. Reference the unit SOI, item 120.	P	F
<p><b>NOTE:</b> Include grid zone letters in messages only when the recipient will need them in order to understand the message. <i>Do not encrypt any other letters.</i> If needed to prevent a the student from misunderstanding, the trainer should say, "The message includes grid zone letters."</p>		
3. Encrypt the numbers the supervisor provided to you. Reference the unit SOI, item 120.	P	F
4. Prepare for transmission. Reference the unit SOI, item 120.	P	F
5. Decrypt the grid zone letters and numbers. Reference the unit SOI, item 120.	P	F
6. Issue a challenge and authenticate the reply. Reference the unit SOI, items 115 and 120. a. Challenge a station using authentication. b. Reply to a station using authentication.	P	F
7. Perform transmission authentication. Reference the unit SOI, items 116 and 120.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

**Required**  
Unit SOI  
KTC 1400(\*)

**Related**  
None



## ENCODE AND DECODE MESSAGES USING KTC 600(\*) TACTICAL OPERATIONS CODE 113-573-4003

### CONDITIONS

Given a tactical or nontactical situation, in an NBC environment or not; given a requirement to *encode* plaintext messages (provided) and to *decode* encoded messages (provided). Supervision, assistance, and a unit SOI extract with KTC 600(\*) (OPCODE) will be available.

### STANDARDS

Use the KTC 600(\*) to encode and decode a message IAW the performance measures within 30 seconds per code group or word/phrase.

### TRAINING AND EVALUATION

See security precautions ([Figure 1](#)).

#### SECURITY PRECAUTIONS

1. Note that each set of the KTC 600(\*) tactical operations code remains effective for 48 hours unless otherwise directed by the signal office. (Refer to the Unit SOI, KTC 600[\*] operating instructions.)
2. Never mix plain language with encoded messages.
3. Keep spelling and punctuation to a minimum.
4. For the more commonly used phrases, use the variant code groups provided to you impartially and at random.
5. Spare groups provided to you let you assign additional variants to plaintext phrases in the code, or to assign new plaintext values, as required.

**Figure 1. Security precautions.**

## EVALUATION GUIDE

### Performance Measures

### Results

1. Encode a message. (The supervisor will provide the message.)
- Write the plaintext message on a piece of paper. Leave enough space above each line to write the code values.
  - Turn to the code set appropriate for that time period.
  - Find the word, phrase, or number you must encode. Write the three-letter code group on the message.

P      F

**NOTES:** 1. The encode section of the operations code consists of the words and phrases, arranged alphabetically, commonly used in tactical operations.

2. The numeral section of the code provides two types of code groups for each number:
- Use the numbers not followed by the symbol (+) when you use the numerals singularly or as the first final number of a group of numbers.
  - Use the numbers with the (+) ending with all but the final number of a group of numbers.

2. Decode a message that has been provided.
- After receiving and writing down the encoded message, turn to the code set appropriate for that time period.

P      F

**NOTE:** The decode section of the operations code consists of the three-letter code groups in alphabetical order, with a word, phrase, or number to the right of each group.

- Find the code group. Write the word, phrase, or number under that group in the encoded message.

**NOTE:** Some vocabulary entries include word endings such as **-ing**, **-ed**, **-ly**. If the message content does not clearly indicate which ending applies, spell out these endings.

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

**REFERENCES****Required**

Unit SOI, KTC 600(\*)

**Related**

None

## COMMUNICATIONS

### OPERATE TELEPHONE SET TA-312/PT 113-600-2007

#### CONDITIONS

Given a tactical or nontactical situation, in any weather conditions, and in an NBC environment or not, and given two telephone sets TA-312/PT (installed), an H-144/U headset, a screwdriver, and TM 11-5805-201-12.

#### STANDARDS

Initiate a call and complete it IAW the performance measures.

#### TRAINING AND EVALUATION

##### EVALUATION GUIDE

Performance Measures	Results	
1. Initiate a call in the prescribed mode of operation.	P	F
2. Answer calls in the prescribed mode of operation.	P	F
<b>NOTE:</b> If the telephone operator must keep his hands free during operations, you may use Performance Measure 3.		
3. Answer calls using external headset.	P	F
<b>NOTE:</b> Operating under less than ideal conditions may require the operator to make special operating considerations.		
4. Operate telephone set under unusual conditions.	P	F

#### FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

#### REFERENCES

Required	Related
TM 11-5805-201-12	None

## INSTALL HOT LOOP 113-588-1087

### CONDITIONS

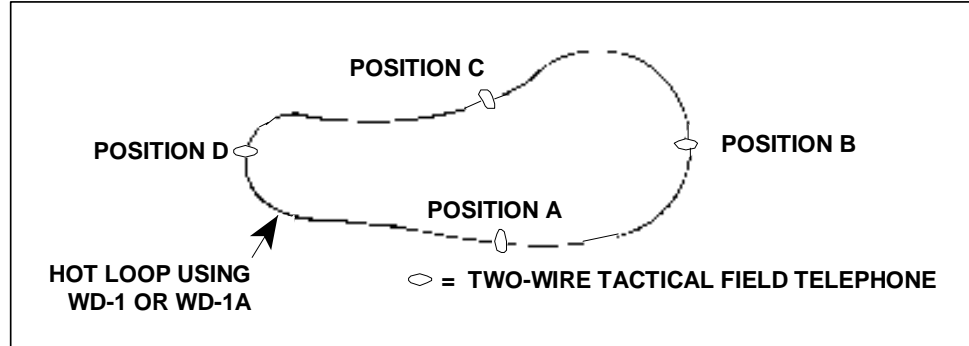
Given a tactical or nontactical situation, in any weather conditions, an NBC environment or not, and a requirement to establish a hot loop. Also given one roll of either WD-1/TT OR WD-1A on a reel, four operational two-wire tactical field telephones, tool equipment TE-33, one reel unit RL-31E or CE-11 or, as required, four prepared tags, four stakes, and one hammer.

### STANDARDS

Soldier installs a hot loop and completes a communications check within 20 minutes.

### TRAINING AND EVALUATION Training Information Outline

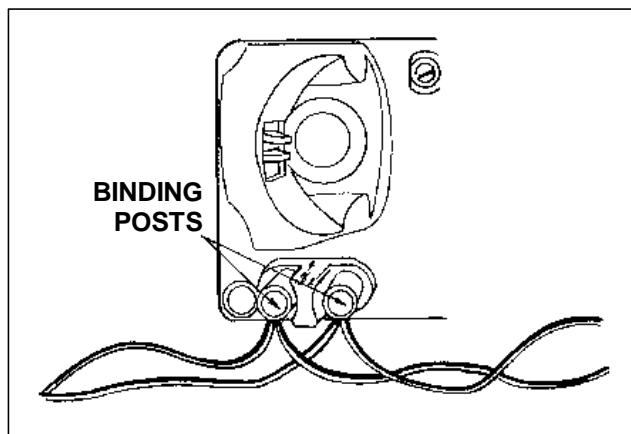
1. Install a field wire loop.
  - a. Lay out the field wire from position A to each position in turn, until you have connected all positions. Complete the loop by returning to position A ([Figure 1](#)).



**Figure 1. Field wire layout.**

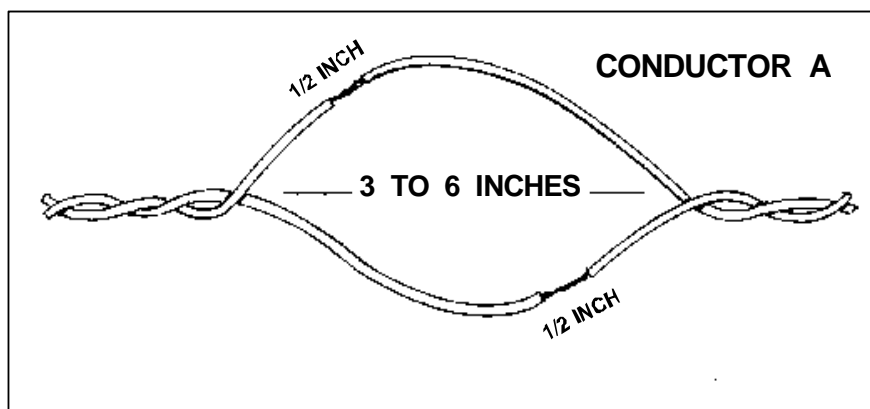
- b. Keep wire behind the individual positions.
  - c. Tie the wire to a fixed object, or stake, near each position and leave enough slack in the wire for connections.
2. Connect each two-wire tactical telephone to the hot loop, position A.
  - a. Connect the hot loop to the telephone.
    - (1) Strip 1/2 inch of insulation off the two wires at each end of the hot loop.

(2) Connect one of the wires from each end of the hot loop to one binding post of the telephone, and the other wire from each end of the loop to the other binding post (Figure 2).



**Figure 2. Connect the hot loop to the telephone.**

- b. Connect the other telephones to the hot loop.
  - (1) Go to one of the positions in the hot loop.
  - (2) Pick up the wire.
  - (3) Cut the insulation on one conductor without cutting the wire strands. Use the TL-13-A pliers or TL-29 knife.
  - (4) Grasp the insulation on each side of the cut and pull the insulation apart to expose 1/2 inch of wire strands on each conductor (Figure 3).



**Figure 3. Wire strands on conductor.**

- (5) Repeat the steps in subparagraphs (1) and (2) on the other conductor.
- (6) Slide an exposed 1/2-inch section of one conductor into one binding post of the telephone.
- (7) Slide the exposed 1/2-inch section of the other conductor into the other binding post of the telephone.

(8) Repeat the steps in subparagraphs (1) through (7) to connect each telephone in the hot loop.

3. Make a communications check. Use any telephone in the system and ring down the circuit. If all positions answer, you have installed the hot loop correctly. If any position does not answer, check the connections.

## EVALUATION GUIDE

Performance Measures	Results	
1. Install a field wire hot loop to four designated positions.	P	F
2. Connect a two-wire tactical telephone set to the field wire hot loop at each designated position.	P	F

## FEEDBACK

If the soldier passes all steps, score him GO. If he fails any steps, score him NO-GO, then show him what he did wrong and how to do it correctly.

## REFERENCES

Required	Related
None	None

## APPENDIX A

### PROPONENT SCHOOL OR AGENCY CODES

**NOTE:** The first three digits of the task number indicates the school or agency responsible for the task content:

031	US Army Chemical School	ATTN: ATZN-CM-FI Fort McClellan, AL 36203-5020
051	US Army Engineer School	ATTN: ATZA-TDI-C Fort Belvoir, VA 22060-5291
113	US Army Signal Center	ATTN: ATZH-TD-A Fort Gordon, GA 30905-5070
081	US Army Medical Department Center	ATTN: HSHA-TDP Fort Sam Houston, TX 78234-6100



## **APPENDIX B**

# **EXAMPLE COMPLETED DA FORM 5164-R (HANDS-ON EVALUATION)**

See STP 21-24-SMCT or AR 350-57 for reproducible DA Form 5164-R and instructions for its use.

HANDS-ON EVALUATION For use of this form, see AR 350-57; the proponent agency is DCSOPS		DATE <b>15 May 1999</b>	
TASK TITLE Unload an M16A1 or M16A2 Rifle		TASK NUMBER 071-311-2028	
ITEM a	PERFORMANCE STEP TITLE b	SCORE (Check One)	
		PASS C	FAIL D
1	Places the selector lever on SAFE	<input checked="" type="checkbox"/> P	<input type="checkbox"/> F
2	Removes the magazine	<input checked="" type="checkbox"/> P	<input type="checkbox"/> F
3	Locks the bolt open	<input checked="" type="checkbox"/> P	<input type="checkbox"/> F
4	Returns the charging handle forward	<input checked="" type="checkbox"/> P	<input type="checkbox"/> F
5	Checks the receiver and chamber	<input checked="" type="checkbox"/> P	<input type="checkbox"/> F
6	Allows the bolt to go forward	<input checked="" type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
		<input type="checkbox"/> P	<input type="checkbox"/> F
EVALUATOR'S NAME <b>SSG Gomez</b>		UNIT	
SOLDIER'S NAME <b>PFC MacDonald</b>		STATUS GO <input checked="" type="checkbox"/> NO GO	

DA FORM 5164-R, SEP 85

B-1. Example completed DA Form 5164-R, *Hands-On Evaluation*.

## APPENDIX C

# CRITICAL TASKS

*This appendix lists all 11BCHM skill level 1 critical tasks. Some of these critical tasks are not published in this manual in training evaluation outlines. Each 11BCHM soldier is responsible for maintaining task proficiency on critical tasks. These are the tasks the soldier must know in order to properly perform the missions and functions of the MOS and duty position in support of the unit's METL.*

WEAPONS REFERENCES			
071-317-0000	Prepare an Antiarmor Range Card	FM 23-34	
441-091-1102	Engage Hostile Aircraft with Small Arms	FM 44-8	
071-002-0001	Maintain a Caliber .45 Pistol	FM 23-35	
071-002-0002	Perform a Function Check on a Caliber .45 Pistol	FM 23-35	
071-002-0003	Correct Malfunctions of a Caliber .45 Pistol	FM 23-35	
071-002-0004	Load a Caliber .45 Pistol	FM 23-35	
071-002-0005	Unload a Caliber .45 Pistol	FM 23-35	
071-311-3002	Engage Targets with a Caliber .45 Pistol	FM 23-35	
071-004-0001	Maintain an M9 Pistol	TM 9-1005-317-10	
071-004-0002	Perform a Function Check on an M9 Pistol	TM 9-1005-317-10	
071-004-0003	Load an M9 Pistol	FM 23-35	TM 9-1005-317-10
071-004-0004	Unload an M9 Pistol	FM 23-35	TM 9-1005-317-10
071-004-0005	Correct Malfunctions of an M9 Pistol	FM 23-35	TM 9-1005-317-10
071-004-0006	Engage Targets with an M9 Pistol	FM 23-35	TM 9-1005-317-10
071-008-0001	Mount a Night Vision Sight AN/PVS-4 on an M16A1 or M16A2 Rifle	FM 90-10-1	TM 11-5855-213-10
071-008-0002	Dismount a Night Vision Sight AN/PVS-4 from an M16A1 or M16A2 Rifle	FM 5-34	TM 11-5855-213-10
071-311-2004	Zero an M16A1 Rifle	FM 23-9	
071-311-2006	Construct Field-Expedient Firing Aids for an M16A1 or M16A2 Rifle	FM 7-8	FM 21-75
071-311-2007	Engage Targets with an M16A1 or M16A2 Rifle	FM 23-9	
071-311-2025	Maintain an M16A1 or M16A2 Rifle	TM 9-1005-249-10	
071-311-2026	Perform a Function Check on an M16A1 or M16A2 Rifle	FM 23-9	TM 9-1005-249-10
071-311-2027	Load an M16A1 or M16A2 Rifle	FM 23-9	TM 9-1005-319-10 TM 9-1005-249-10
071-311-2028	Unload an M16A1 or M16A2 Rifle	FM 23-9	TM 9-1005-249-10

WEAPONS REFERENCES				
071-311-2029	Correct Malfunctions of an M16A1 or M16A2 Rifle	FM 23-9	TM 9-1005-249-10	
071-311-2030	Zero an M16A2 Rifle	FM 23-9	TM 9-1005-249-10	
071-315-2307	Zero a Night Vision Sight AN/PVS-4 to an M16A1 or M16A2 Rifle	TM 11-5855-213-10		
071-315-2308	Engage Targets with an M16A1 or M16A2 Rifle Using a Night Vision Sight AN/PVS-4	TM 11-5855-213-10		
071-010-0001	Zero a Night Vision Sight AN/PVS-4 to an M249 Machine Gun	FM 23-14		
071-010-0002	Mount a Night Vision Sight AN/PVS-4 on an M249 Machine Gun	FM 23-14		
071-010-0003	Dismount a Night Vision Sight AN/PVS-4 from an M249 Machine Gun	FM 23-14		
071-010-0006	Engage Targets with an M249 Machine Gun	FM 23-14		
071-010-0007	Engage Targets with an M249 Machine Gun Using a Night Vision Sight AN/PVS-4	TM 11-5855-213-10		
071-312-4004	Lay an M249 Machine Gun Using Field Expedients	FM 23-14	TM 9-1005-201-10	
071-312-4025	Maintain an M249 Machine Gun	FM 23-14	TM 9-1005-201-10	
071-312-4026	Perform a Function Check on an M249 Machine Gun	FM 23-14	TM 9-1005-201-10	
071-312-4027	Load an M249 Machine Gun	FM 23-14		
071-312-4028	Unload an M249 Machine Gun	FM 23-14		
071-312-4029	Correct Malfunctions of an M249 Machine Gun	FM 23-14		
071-312-4030	Zero an M249 Machine Gun	FM 23-14	TM 9-1005-201-10	
071-312-4032	Prepare a Range Card for an M249 Machine Gun	FM 7-7J		
071-020-0001	Mount a Night Vision Sight AN/PVS-4 on an M60 Machine Gun	TM 11-5855-213-10		
071-020-0002	Dismount a Night Vision Sight AN/PVS-4 from an M60 Machine Gun	TM 11-5855-213-10		
071-020-0006	Mount an M60 Machine Gun on an M122 Tripod	FM 23-67		
071-020-0007	Dismount an M60 Machine Gun from an M122 Tripod	FM 23-67		
071-312-3003	Lay an M60 Machine Gun Using Field Expedients	FM 23-67		
071-312-3004	Construct a Fighting Position for an M60 Machine Gun	FM 7-7	FM 7-8	FM 23-67
071-312-3007	Prepare a Range Card for an M60 Machine Gun	FM 23-67		
071-312-3025	Maintain an M60 Machine Gun	FM 23-67		
071-312-3026	Perform a Function Check on an M60 Machine Gun	FM 23-67		
071-312-3027	Load an M60 Machine Gun	FM 23-67		
071-312-3028	Unload an M60 Machine Gun	FM 23-67		
071-312-3029	Correct Malfunctions of an M60 Machine Gun	FM 23-67		
071-312-3030	Zero an M60 Machine Gun	FM 23-67		
071-312-3031	Engage Targets with an M60 Machine Gun	FM 23-67		
071-315-0008	Engage Targets with an M60 Machine Gun Using a Night Vision Sight AN/PVS-4	FM 23-67	TM 11-5855-213-10	

WEAPONS REFERENCES				
071-315-2313	Zero a Night Vision Sight AN/PVS-4 to an M60 Machine Gun	TM 11-5855-213-10		
071-022-0001	Maintain a Caliber .50 M2 Machine Gun	FM 23-65		
071-022-0010	Mount a Caliber .50 M2 Machine Gun on an M3 Tripod	FM 23-65		
071-022-0011	Dismount a Caliber .50 M2 Machine Gun from an M3 Tripod	FM 23-65		
071-022-0012	Mount a Caliber .50 M2 Machine Gun on a Vehicle	TM 9-1005-213-10		
071-022-0013	Dismount a Caliber .50 M2 Machine Gun from a Vehicle	TM 9-1005-213-10		
071-022-0014	Construct a Fighting Position for a Caliber .50 M2 Machine Gun	FM 5-103		
071-030-0001	Maintain a MK 19 Machine Gun	FM 23-27		TM 9-1010-230-10
071-030-0007	Perform a Function Check on a MK 19 Machine Gun	FM 23-27		TM 9-1010-230-10
071-030-0009	Mount a MK 19 Machine Gun on a Vehicle	FM 23-27		TM 9-1010-230-10
071-030-0010	Dismount a MK 19 Machine Gun from a Vehicle	FM 23-27		TM 9-1010-230-10
071-030-0011	Mount a MK 19 Machine Gun on an M3 Tripod	FM 23-27		TM 9-1010-230-10
071-030-0012	Dismount a MK 19 Machine Gun from an M3 Tripod	FM 23-27		
071-030-0013	Construct a Fighting Position for a MK 19 Machine Gun	FM 23-27		
071-032-0001	Mount a Night Vision Sight AN/PVS-4 on an M203 Grenade Launcher	TM 11-5855-213-10		
071-032-0002	Dismount a Night Vision Sight AN/PVS-4 from an M203 Grenade Launcher	TM 11-5855-213-10		
071-032-0006	Construct Field-Expedient Firing Aids for an M203 Grenade Launcher	FM 7-7	FM 7-7J	FM 7-8
071-311-2103	Zero an M203 Grenade Launcher	FM 23-31		TM 9-1010-221-10
071-311-2125	Maintain an M203 Grenade Launcher	FM 23-31		TM 9-1010-221-10
071-311-2126	Perform a Function Check on an M203 Grenade Launcher	FM 23-31		TM 9-1010-221-10
071-311-2127	Load an M203 Grenade Launcher	FM 23-31		TM 9-1010-221-10
071-311-2128	Unload an M203 Grenade Launcher	FM 23-31		TM 9-1010-221-10
071-311-2129	Correct Malfunctions of an M203 Grenade Launcher	FM 23-31		TM 9-1010-221-10
071-311-2130	Engage Targets with an M203 Grenade Launcher	FM 23-31		TM 9-1010-221-10
071-315-2351	Zero a Night Vision Sight AN/PVS-4 to an M203 Grenade Launcher	TM 11-5855-213-10		
071-315-2352	Engage Targets with an M203 Grenade Launcher Using a Night Vision Sight AN/PVS-4	TM 11-5855-213-10		
071-034-0001	Load an M243 or M259 Smoke Grenade Launcher	TM 9-2350-259-10		
071-034-0002	Unload an M243 or M259 Smoke Grenade Launcher	TM 9-2350-259-10		
071-034-0003	Perform Misfire Procedures on an M243 or M259 Smoke Grenade Launcher	TM 9-2350-259-10		
071-034-0004	Fire an M243 or M259 Smoke Grenade Launcher	TM 9-2350-259-10		
071-034-0007	Maintain an M243 or M259 Smoke Grenade Launcher	TM 9-2350-259-10		
071-318-2202	Engage Targets with an M72A2/A3 Light Antitank Weapon	FM 23-33		

WEAPONS REFERENCES				
071-318-2203	Perform Misfire Procedures on an M72A2/A3 Light Antitank Weapon	FM 23-33		
071-318-2210	Prepare an M72A2/A3 Light Antitank Weapon for Firing	FM 23-33		
071-318-2211	Restore an M72A2/A3 Light Antitank Weapon to Carrying Configuration	FM 23-33		
071-052-0001	Maintain an M47 Medium Antitank Weapon	TM 9-1425-484-10		
071-052-0003	Construct a Fighting Position for an M47 Medium Antitank Weapon	FM 7-8		
071-052-0004	Restore an M47 Medium Antitank Weapon to Carrying Configuration	TM 9-1425-484-10		
071-052-0005	Operate a Night Vision Sight AN/TAS-5	TM 9-1425-484-10		
071-052-0006	Engage Targets with an M47 Medium Antitank Weapon	TM 9-1425-484-10		
071-317-3302	Prepare an M47 Medium Antitank Weapon for Firing	TM 9-1425-484-10		
071-317-3306	Perform Misfire Procedures on an M47 Medium Antitank Weapon	TM 9-1425-484-10		
071-054-0001	Prepare an M136 Launcher for Firing	TM 9-1340-886-12		
071-054-0002	Restore an M136 Launcher to Carrying Configuration	TM 9-1340-886-12		
071-054-0003	Perform Misfire Procedures on an M136 Launcher	TM 9-1340-886-12		
071-054-0004	Engage Targets with an M136 Launcher	TM 9-1340-886-12		
071-070-0001	Maintain an M202A1 Multishot Rocket Launcher	TM 3-1055-456-12		
071-070-0002	Perform a Function Check on an M202A1 Multishot Rocket Launcher	TM 3-1055-456-12		
071-070-0003	Load an M202A1 Multishot Rocket Launcher	TM 3-1055-456-12		
071-070-0004	Unload an M202A1 Multishot Rocket Launcher	TM 3-1055-456-12		
071-070-0005	Perform Misfire Procedures on an M202A1 Multishot Rocket Launcher	TM 3-1055-456-12		
071-070-0006	Prepare an M202A1 Multishot Rocket Launcher for Firing	TM 3-1055-456-12		
071-070-0007	Restore an M202A1 Multishot Rocket Launcher to Carrying Configuration	TM 3-1055-456-12		
071-070-0008	Engage Targets with an M202A1 Multishot Rocket Launcher	TM 3-1055-456-12		
051-192-1003	Install the M16A1 Antipersonnel Mine	FM 5-34	FM 20-32	TM 9-1345-203-12&P
051-192-1021	Locate Mines by Visual Means	FM 20-32		
051-192-1104	Remove the M16A1 Antipersonnel Mine	FM 5-34	FM 20-32	
051-192-1117	Install the M21 Antitank Mine	FM 5-34	FM 20-32	
051-192-1118	Remove the M21 Antitank Mine	FM 5-34	FM 20-32	
051-192-1135	Locate Mines by Probing	FM 20-32		
051-193-1025	Neutralize Mines	FM 20-32		
071-098-0001	Recover a Mechanical Ambush	FM 21-75		
071-098-0002	Install a Mechanical Ambush	FM 21-75		
071-325-4401	Perform Safety Checks on Hand Grenades	FM 23-30		

**WEAPONS REFERENCES**

071-325-4407	Employ Hand Grenades	FM 23-30	TM 9-1330-200-12
071-325-4425	Employ an M18A1 Claymore Mine	FM 23-23	
071-325-4426	Recover an M18A1 Claymore Mine	FM 23-23	

**VEHICLE REFERENCES**

071-200-0002	Tow a Tracked Vehicle	FM 7-7	
551-721-1342	Maintain the Cooling System on an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1343	Maintain the Fuel System on an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1344	Maintain the Transmission System on an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1345	Start an M998-Series Vehicle Using Auxiliary Power	TM 9-2320-280-10	
551-721-1346	Drive an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1347	Maintain the Air Cleaner System on an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1348	Maintain the Steering System on an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1349	Maintain the Engine on an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1350	Maintain the Brake System on an M998-Series Vehicle	TM 9-2320-280-10	
551-721-1351	Maintain the Battery System on an M998-Series Vehicle	TM 9-2320-280-10	
071-212-0001	Maintain the Air Cleaner System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0002	Maintain the Electrical System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0003	Maintain the Brake System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0004	Maintain the Cooling System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0005	Maintain the Engine on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0006	Maintain the Fuel System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0007	Maintain the Steering System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0008	Maintain the Transmission System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0009	Maintain the Personnel Heater on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0010	Maintain the Fire Suppression System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0011	Maintain the Exhaust System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0012	Maintain the Bilge System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0013	Maintain the Hydraulic System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0014	Maintain the Track and Suspension System on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0015	Maintain the Hull on an M113-Series Vehicle	TM 9-2300-257-10	
071-212-0016	Prepare an M113-Series Vehicle for Water Operation	TM 9-2300-257-10	
071-212-0017	Maintain the Gas Particulate System on an M113-Series Vehicle	TM 9-2300-257-10	

## VEHICLE REFERENCES

071-212-0018	Operate the Gas Particulate System on an M113-Series Vehicle	TM 9-2300-257-10
071-212-0019	Operate the M19 Periscope on an M113-Series Vehicle	TM 9-2300-257-10
071-212-0020	Start an M113-Series Vehicle Using Auxiliary Power	TM 9-2300-257-10
071-212-0021	Drive an M113-Series Vehicle	TM 9-2300-257-10

## BASIC TACTICS

071-326-0501	Move as a Member of a Fire Team	FM 7-7	FM 7-8	FM 7-7J	FM 7-70
071-326-0502	Move Under Direct Fire	FM 21-75			
071-326-0503	Move Over, Through, or Around Obstacles (Except Minefields)	FM 21-75			
071-326-0510	React to Indirect Fire While Dismounted	FM 21-75			
071-326-0511	React to Flares	FM 21-75			
071-326-0512	Estimate Range	FM 6-30			
071-326-0513	Select Temporary Fighting Positions	FM 21-75			
071-326-5703	Construct an Individual Fighting Position	FM 7-8			
071-331-0852	Clear a Field of Fire	FM 7-7	FM 7-8		
071-410-0001	Perform Self-Extraction from a Minefield	FM 20-32			

## MOVE

051-195-1004	Install Pickets, Make Barbed Wire Ties, and Install Concertina	FM 5-34	STP 5-12B24-SM-TG
071-326-0541	Perform Movement Techniques During MOUT	FM 90-10-1	
071-326-0542	Enter a Building During MOUT	FM 90-10-1	
071-326-0550	Prepare Positions for Individual and Crew-Served Weapons During MOUT	FM 90-10	FM 90-10-1
071-326-0557	Select Hasty Firing Positions During MOUT	—	

## NAVIGATE

071-329-1005	Determine a Location on the Ground by Terrain Association	FM 21-26
071-329-1006	Navigate from One Point on the Ground to Another Point While Dismounted	FM 21-26
071-329-1018	Determine Direction Without a Compass	FM 21-26
071-329-1000	Identify Topographic Symbols on a Military Map	FM 21-26
071-329-1001	Identify Terrain Features on a Map	FM 21-26
071-329-1002	Determine the Grid Coordinates of a Point on a Military Map	FM 21-26
071-329-1008	Measure Distance on a Map	FM 21-26
071-329-1009	Convert Azimuths	FM 21-26
071-329-1012	Orient a Map to the Ground by Map-Terrain Association	FM 21-26



NAVIGATE				
071-510-0002	Compute Back Azimuths		FM 21-26	
071-329-1003	Determine a Magnetic Azimuth Using a Lensatic Compass		FM 21-26	
071-329-1011	Orient a Map Using a Lensatic Compass		FM 21-26	
SUSTAIN				
051-191-1501	Perform Individual Camouflage		FM 5-20	FM 21-75
051-191-1362	Camouflage Equipment		FM 5-20	FM 21-75
071-600-0001	Destroy Supplies and Equipment		FM 5-25	
081-831-1000	Evaluate a Casualty		FM 21-11	
081-831-1003	Clear an Object from the Throat of a Conscious Casualty		FM 21-11	
081-831-1005	Prevent Shock		FM 21-11	
081-831-1007	Give First Aid for Burns		FM 21-11	
081-831-1008	Give First Aid for Heat Injuries		FM 21-11	
081-831-1009	Give First Aid for Frostbite		FM 21-11	
081-831-1016	Put on a Field or Pressure Dressing		FM 21-11	
081-831-1017	Put on a Tourniquet		FM 21-11	
081-831-1025	Apply a Dressing to an Open Abdominal Wound		FM 21-11	
081-831-1026	Apply a Dressing to an Open Chest Wound		FM 21-11	
081-831-1030	Administer Nerve Agent Antidote to Self (Self-Aid)		FM 21-11	
081-831-1031	Administer First Aid to a Nerve Agent Casualty (Buddy-Aid)		FM 21-11	
081-831-1033	Apply a Dressing to an Open Head Wound		FM 21-11	
081-831-1034	Splint a Suspected Fracture		FM 21-11	
081-831-1040	Transport a Casualty Using a One-Man Carry		FM 21-11	
081-831-1041	Transport a Casualty Using a Two-Man Carry or an Improvised Litter		FM 21-11	
081-831-1042	Perform Mouth-to-Mouth Resuscitation		FM 21-11	
081-831-1043	Practice Preventive Medicine		FM 21-11	
181-906-1505	Conduct Combat Operations According to the Law of War		FM 27-2	FM 27-10
191-377-5250	Handle Enemy Personnel and Equipment		FM 27-10-2	
031-503-1004	Protect Yourself from Chemical and Biological Injury/Contamination Using Your M17-Series Protective Mask with Hood		TM 3-4240-279-10	
031-503-1005	Maintain Your M17-Series Protective Mask with Hood		TM 3-4240-279-10	
031-503-1006	Protect Yourself from NBC Injury/Contamination When Drinking from Your Canteen While Wearing Your Protective Mask		TM 3-4240-279-10 TM 3-4240-280-10	TM 3-4240-300-10-1
031-503-1007	Decontaminate Your Skin and Personal Equipment Using an M258A1 Decontamination Kit		FM 3-5	

SUSTAIN				
031-503-1008	Protect Yourself from Chemical and Biological Injury/Contamination While Eliminating Body Waste When Wearing MOPP4	FM 3-4	FM 21-11	
031-503-1011	Maintain Your M24- or M25-Series Protective Mask with Hood	TM 3-4240-280-10		
031-503-1012	Protect Yourself from Chemical and Biological Injury/Contamination Using Your M24- or M25-Series Protective Mask with Hood	TM 3-4240-280-10		
031-503-1014	Identify Chemical Agents Using M8 Detector Paper	TM 3-6665-307-10		
031-503-1015	Protect Yourself from NBC Injury/Contamination with Mission-Oriented Protective Posture (MOPP) Gear	FM 3-4		
031-503-1018	React to a Nuclear Hazard	FM 3-3	FM 3-4	FM 3-100
031-503-1019	React to Chemical or Biological Hazard/Attack	FM 3-4	FM 21-60	
031-503-1020	Detect Chemical Agents Using M9 Detector Paper	TM 3-6665-311-10		
031-503-1023	Protect Yourself from NBC Injury/Contamination When Changing Mission-Oriented Protective Posture (MOPP) Gear	FM 3-5		
031-503-1024	Replace Canister on Your M40-Series Protective Mask	TM 3-4240-300-10-1	TM 3-4240-300-10-2	
031-503-1025	Protect Yourself from Chemical and Biological Injury/Contamination Using Your M40-Series Protective Mask with Hood	TM 3-4240-300-10-1		
031-503-1026	Maintain Your M40-Series Protective Mask with Hood	TM 3-4240-300-10-1		
031-503-1028	Protect Yourself from Chemical and Biological Injury/Contamination Using Your M42 Protective Mask with Hood	TM 3-4240-300-10-2		
031-503-1029	Maintain Your M42 Protective Mask with Hood	TM 3-4240-300-10-2		
031-503-1030	Prepare the Chemical Agent Monitor for Operation	TM 3-4230-216-10 TM 3-4230-278-10	TM 3-6665-327-13&P	
031-503-1031	Put the Chemical Agent Monitor into Operation	TC 3-3-5	TM 3-6665-327-13&P	
031-503-1032	Prepare the Chemical Agent Monitor for Movement or Storage	FM 3-5	TC 3-3-5	TM 3-6665-327-13&P
031-503-1033	Decontaminate Your Skin Using the M291 Skin Decontaminating Kit (SDK)	—		
031-503-1034	Decontaminate Your Individual Equipment Using the M295 Individual Equipment Decontamination Kit (IEDK)	—		
031-506-1052	Protect Yourself and Others from Chemical and Biological Injury/Contamination by Using (Entering or Exiting) a Collective Protection Shelter	—		
031-507-1002	Decontaminate Equipment Using ABC M11 Decontaminating Apparatus	STP 3-54B1	TM 3-4230-204-12&P	
031-507-1021	Mark NBC Contaminated Area	FM 3-5		
031-507-1022	Decontaminate Equipment Using M13 Decontaminating Apparatus, Portable	FM 3-5	STP 3-54B1	
031-507-2006	Conduct Hasty Decontamination	STP 3-54B1		
RECONNAISSANCE AND SECURITY				
071-315-0003	Operate a Night Vision Sight AN/PVS-4	TM 11-5855-213-10		
071-315-0030	Operate Night Vision Goggles AN/PVS-5	TM 11-5855-238-10		
071-315-0031	Maintain Night Vision Goggles AN/PVS-5	TM 11-5855-238-10		

RECONNAISSANCE AND SECURITY			
071-315-0090	Maintain a Thermal Viewer AN/PAS-7	TM 11-5855-246-10	
071-315-0091	Operate a Thermal Viewer AN/PAS-7	TM 11-5855-246-10	
071-710-0001	Maintain a Night Vision Sight AN/PVS-4	TM 11-5855-213-10	
071-710-0008	Operate Night Vision Goggles AN/PVS-7	TM 11-5855-246-10	
071-710-0009	Maintain Night Vision Goggles AN/PVS-7	TM 11-5855-246-10	
071-331-0001	Perform as a Member of a Patrol	FM 21-75	
071-331-0801	Challenge Persons Entering Your Area	FM 21-75	FM 22-6
071-331-0804	Perform Surveillance Without the Aid of Electronic Devices	FM 21-75	
071-331-0808	Identify Threat Weapons	FM 7-8	FM 71-1
071-331-0815	Practice Noise, Light, and Litter Discipline	FM 21-75	
071-730-0001	Emplace Pyrotechnic Early Warning Devices	FM 5-25	FM 5-34
071-730-0002	Recover Pyrotechnic Early Warning Devices	FM 5-25	FM 5-34
071-730-0008	Employ Field-Expedient Early Warning Devices	FM 5-25	FM 5-34
301-348-1050	Report Information of Potential Intelligence Value	—	
878-920-1002	Recognize Friendly and Threat Armored Vehicles and Aircraft	FM 1-402	FM 44-30
COMMUNICATE			
071-810-0003	Construct a Field-Expedient Antenna	FM 24-1	
071-810-0004	Maintain Intercommunications Set AN/VIC-1 on a Tracked Vehicle (Includes FM Radio)	TM 11-5820-401-10-2	
113-571-1004	Operate in Radio Nets	FM 24-18	
113-573-4003	Encode and Decode Messages Unit SOI, Using KTC 600(*) Tactical KTC 600(*) Operations Code	—	
113-573-4006	Use the KTC 1400(*) Numerical Unit SOI, Cipher/Authentication System KTC 1400(*)	—	
113-573-6001	Recognize Electronic Countermeasures (ECM) and Implement Electronic Counter Countermeasures (ECCM)	FM 24-18	
113-573-7017	Prepare/Submit Operator's (MIJI) Report	FM 24-18	
113-587-1064	Prepare SINGARS (Manpack) for Operation	FM 24-18	
113-587-2059	Operate Radio Set AN/PRC-77 with TSEC/KY-57	TM 11-5820-498-12	
113-587-2061	Operate Radio Set AN/VRC-64 or AN/GRC-160 with TSEC/KY-57	TM 11-5820-498-12	
113-587-2064	Operate Radio Set AN/VRC-12 Series with TSEC/KY-57	TM 11-5820-401-10-2	
113-587-2070	Operate Secure SINGARS Single Channel (SC)	FM 24-18	
113-587-2071	Operate Secure SINGARS Frequency Hopping (FH) (Net Members)	FM 24-18	
113-587-2072	Operate Secure SINGARS Frequency Hopping (FH) Net Control Station (NCS)	FM 24-18	

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113-587-2076	Operate Secure SINCGARS Using Control Monitor (CM)	FM 24-18
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071-820-0001	Operate Telephone Set TA-1/PT	TM 11-5805-201-12
071-820-0002	Install Telephone Set TA-1/PT	TM 11-5805-201-12
071-820-0003	Install Communications Wire Lines	FM 24-20
071-820-0004	Recover Communications Wire Lines	FM 24-20
113-571-1022	Perform Voice Communications	—
113-572-4008	Transmit a Voice United States Message Text Format (USMTF) Message	—
113-572-5005	Receive a Voice United States Message Text Format (USMTF) Message	—
113-572-6006	Read a United States Message Text Format (USMTF) Message	—
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113-588-1087	Install Hot Loop	SH 7-180
113-588-4025	Repair Telephone Cable WD-1()/TT or WF-16/U	FM 24-20
113-594-2005	Install and Operate Switchboard, Telephone, Manual SB-993/GT	TM 11-5805-02-94-15
113-594-2014	Operate Switchboard, Telephone, Manual SB-22/PT	TM 11-5805-202-12
113-600-1023	Install Tactical Telephones	TM 11-5805-201-12
113-600-2007	Operate Telephone Set TA-312/PT	TM 11-5805-201-12
113-600-3015	Perform Operator's PMCS on Tactical Telephone Sets	TM 11-5805-201-12
071-326-0600	Use Visual Signaling Techniques While Dismounted	FM 21-60
COMMAND AND STAFF		
101-515-1900	Perform Mortuary Affairs Operations	—

# GLOSSARY

## ACRONYMS AND ABBREVIATIONS

AC	alternate current
ACCP	Army Correspondence Course Program
AGS	a 30-mm automatic grenade launcher developed by the former Soviet Union
AIT	Advanced Individual Training
AKM	a 7.62-mm assault rifle developed by the former Soviet Union
AKMS	a 7.62-mm assault rifle developed by the former Soviet Union
alt	alternate
ammo	ammunition
APC	armored personnel carrier
AR	Army Regulation
ARNG	Army National Guard
ARTEP	Army Training and Evaluation Program
AT	antitank
ATGM	antitank guided missile
batt	battery
BML	by-product materials license
BNCOC	Basic NCO Course
BMD	a vehicle developed by the former Soviet Union
BMP	a fighting vehicle developed by the former Soviet Union
BRDM	a scout car developed by the former Soviet Union
BT	basic training
C	Centigrade
CB	chemical, biological
CGy	centigray; a unit of absorbed dose of radiation equal to a rad
cGyph	centigray per hour
CLP	cleaner, lubricant, preservative
cm	centimeter
COMSEC	communications security
CP	command post
CRT	cathode ray tube
CSS	combat service support
CTA	common table of allowances
CTT	common task test
CX	coaxial cable designator
DA	Department of the Army
DAP	decontaminating apparatus, portable
DS	direct support
DS2	decontamination solution No. 2

DTG	date-time group
ECM	electronic countermeasures
ECCM	electronic counter-countermeasures
EENT	end of evening nautical twilight
EOD	explosive ordnance disposal
EPW	enemy prisoner of war
ERF	electronic remote fill (offset frequency)
EW	electronic warfare
F	Fahrenheit
FDC	fire direction center
FH	frequency hopping
FM	field manual
FO	forward observer
FOV	field of view
FPF	final protective fires
FPL	final protective line
FRAGO	fragmentary order
freq	frequency
ft	feet
gnd	ground
GSR	ground surveillance radar
HAW	heavy antitank weapon
HE	high explosive
HMMWV	high mobility multipurpose wheeled vehicle
IAW	in accordance with
ICOM	intercommunications
ID	identification
IEDK	individual equipment decontamination kit
IET	initial entry training
IL	Illinois
in	inch
IR	infrared
ITEP	Individual Training and Evaluation Program
ITP	individual training plan
JB	job book
km	kilometer(s)
LAW	light antitank weapon; lubricant, arctic weather
LBE	load-bearing equipment

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LD	lighted display
LSA	logistics support analysis
LZ	landing zone
m	meter
MAW	medium antitank weapon
MEDEVAC	medical evacuation
METL	mission-essential task list
METT-T	mission, enemy, terrain, troops, and time available
MG	machine gun
MIJI	meaconing, intrusion, jamming, and interference
mm	millimeter
MOPP	mission-oriented protective posture
MOS	military occupational specialty
MOSC	military occupational specialty code
MOUT	military operations on urbanized terrain
MRL	multiple rocket launcher
MPRJ	Military Personnel Records Jacket, US Army
MRL	multiple rocket launchers
MTP	mission training plan
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NCS	net control station
NSN	national stock number
OEG	operational exposure guidance
OIC	officer in charge
OP	observation point
OPCODE	operations code
OPLAN	operation plan
OPORD	operations order
OPSEC	operations security
ORP	objective rally point
OSUT	one-station unit training
PDF	principal direction of fire
PEWS	platoon early warning system
PIR	priority intelligence requirements
PKM	a general-purpose machine gun developed by the former Soviet Union; the PKM uses a 7.62-mm x 54R (rimmed) cartridge (same as the SVD sniper rifle)
PL	phase line
PLDC	Primary Leadership Development Course

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PMCS	preventive maintenance checks and services
psi	pounds per square inch
PSYOP	psychological operations
PTT	push-to-talk
RATELO	radiotelephone operator
RBC	rifle bore cleaner
RCU	remote control unit
RDF	radio direction finding
RF	radio frequency
RPG	a rocket-propelled grenade launcher developed by the former Soviet Union; includes the RPG-7 and RPG-16, which are reloadable, and the RPG-18, which is disposable, and which is the oldest of the LAW-type RPGs
RPK	a 7.62-mm light machine gun (the RPK) developed by the former Soviet Union
RPK-74	a 5.45 light machine gun developed by the former Soviet Union
RPO	radiation protection officer
RT	receiver/transmitter
SAW	squad automatic weapon
SC	single channel
SI	set indicator
SINCGARS	single-channel ground and airborne radio subsystem
SL	skill level
SM	soldier's manual
SMCT	soldier's manual of common tasks
SOI	signal operation instructions
SOP	standing operating procedures
SPG-9	a 73-mm antitank recoilless gun developed by the former Soviet Union
STP	soldier training publication
SVD	sniper rifle dragunov; a 7.62-mm x 54R (rimmed) cartridge sniper rifle developed by the former Soviet Union
T&E	traversing and elevating
TC	training circular
TEK	traffic encryption key
TG	trainer's guide
TM	technical manual
TMDE	test measurement diagnostic equipment
TO&E	table of organization and equipment
TOW	tube-launched, optically tracked, wire-guided
TP	training practice; tank platoon
TRP	target reference point
TSEC	telecommunications security



TW	target width
US	United States
USAIS	United States Army Infantry School
USAR	United States Army Reserve
W	wire

### **DEFINITIONS**

beaten zone	The pattern formed when rounds or bursts strike the ground or a target
centigray	A unit of absorbed dose of radiation equal to a rad
defile	A narrow passage in which troops can march only in a single file
encoded	(A message) converted into code
manpack	Designed to be carried by one person
plaintext	The intelligible form of an encrypted text or of its elements
trip wire	A low-placed concealed wire used to trip an enemy or trespasser and to trigger an alarm or explosive device
zulu time	Greenwich mean time

# REFERENCES

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*These documents must be available to the intended users of this publication.*

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DA Form 5517-R	Standard Range Cards, February 86.
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FM 23-34	TOW Weapon System, 17 August 94.
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FM 71-1	Tank and Mechanized Infantry Company Team, 26 January 98.
FM 90-10 (HTF)	Military Operations on Urbanized Terrain (MOUT) (How to Fight), 15 August 79.
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GTA 17-2-11	Combat Vehicle Identification (CVI) Training Cards, 1984.
GTA 17-2-13	Armored Vehicle Recognition, 1987.
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TM 9-1005-213-10	Operator's Manual for Machine Guns, Caliber .50 Browning, M2, Heavy Barrel Flexible, 6 August 92; with Change 1, 1 August 95 and Change 2, 6 August 96.
TM 9-1005-317-10	Operator's Manual for Pistol, Semiautomatic, 9MM, M9, 31 July 85; with Change 1, 10 July 98; Change 2, 28 March 89; and Change 3, 14 December 90.
TM 11-5805-201-12	Operator's and Unit Maintenance Manual for Telephone Sets, TA-312/PT and TA-312A/PT, 1 August 90.

**READINGS RECOMMENDED**

*These readings contain relevant supplemental information.*

DA Pam 738-750	Functional Users Manual for the Army Maintenance Management System, 1 August 94.
FM 3-3	Chemical and Biological Contamination Avoidance, 16 November 1992; with Change 1, 29 September 94.
FM 3-5	NBC Decontamination, 17 November 93.
FM 5-34	Engineer Field Data, 30 August 99.
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FM 7-7	The Mechanized Infantry Platoon and Squad (APC), 15 March 85.
FM 7-7J	Mechanized Infantry Platoon and Squad (Bradley), 7 May 93.
FM 7-8	Infantry Rifle Platoon and Squad, 22 April 92.
FM 20-32	Mine/Countermining Operations, 29 May 98; with Change 1, 30 June 99.
FM 21-10	Field Hygiene and Sanitation, 22 November 88.
FM 21-11	First Aid for Soldiers, 27 October 88; with Change 1, 28 August 89 and Change 2, 4 December 91.
FM 21-75	Combat Skills of the Soldier, 3 August 84.
FM 23-25	Light Antiarmor Weapons, 17 August 94.
FM 23-31	40-mm Grenade Launcher, M203, 20 September 94.
FM 23-35	Combat Training with Pistols and Revolvers, 3 October 88.
FM 24-18	Tactical Single-Channel Radio Communications Techniques, 30 September 87.
FM 31-70	Basic Cold Weather Manual, 12 April 68; with Change 1, 17 December 68.
STP 21-1-SMCT	Soldier's Manual of Common Tasks Skill Level 1, 1 October 94.

TM 3-4230-214-12&P	Operator's and Unit Maintenance Manual Including Repair Parts and Special Tools List for Decontaminating Apparatus: Portable, 14 Liter, M13 and Decontaminating Apparatus: Portable, 14 Liter, M13 (Practice), 15 August 92.
TM 3-9905-001-10	Operator's Manual for Marking Set, Contamination: Nuclear, Biological, Chemical (NBC), 23 August 82; with Change 1, 31 August 87.
TM 9-1010-221-10	Operator's Manual for 40-mm Grenade Launcher, M203, 17 December 84; with Changes 1-6, dated 22 April 85 through 17 August 98.
TM 9-1010-230-10	Operator's Manual for Machine Gun, 40-mm, MK 19, MOD 3, 28 November 96.
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TM 9-1425-484-10	Operator's Manual for Dragon Weapon Guided Missile System, Surface Attack: M47 (Medium Antitank/Assault Weapon System), 31 July 79; with Changes 1-13, dated 17 October 80 through 30 March 93.
TM 11-5820-890-10-1	Operator's Manual for SINCGARS Ground Combat Net Radio, ICOM, 1 September 92.
TM 11-5820-890-10-3	Operator's Manual for SINCGARS Ground Combat Net Radio, Non-ICOM, 1 September 92.
TM 11-5820-890-10-8	Operator's Manual, SINCGARS Ground Combat Net Radio, ICOM, [ANCD and PLGR] 28 Feb 95.

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### **INTERNET**

*You may be able to view, save, or print some manuals from the Internet. Make sure to download only approved documents from official Army web sites such as the following:*

<http://www.usapa.army.mil> **U.S. Army Publishing Agency**

From this site, you may view or download FM 200-1, and you may be able to obtain other electronic administrative departmental publications and forms, to include Army Regulations; Department of the Army circulars, forms, and pamphlets; optional forms; standard forms; and Department of Defense forms:

<http://www.adtdl.army.mil> **Army Doctrinal Literature Digital Library**

From this site, you may view or download FM 5-250, and you may be able to obtain other Army Doctrinal and Training Publications (except engineering & medical), to include field manuals, professional bulletins, training circulars, and soldier training publications:

<http://www.logsa.army.mil/> **USAMC Logistics Support Activity**

From this site, you may view or download TM 9-1425-450-12 and TM 9-2350-259-10.